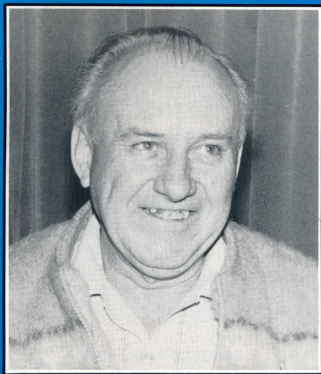


Amateur Radio



JOURNAL OF THE WIRELESS INSTITUTE OF AUSTRALIA
VOL 55, No 8, AUGUST 1987



**HAPPY BIRTHDAY INTRUDER WATCH
USSR CALL SIGNS
TRIBUTE TO VK3RJ
VHF/UHF BUILDING BLOCKS
2-METRE METEOR SCATTER
TREASURER'S REPORT**

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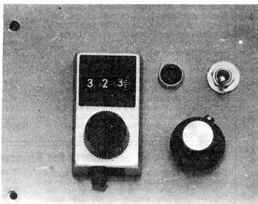
FRONT COVER: This year the Intruder Watch service enters its 21st year. Henry Andersson VK6HA, has been a stalwart supporter of the IW since 1975.

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DEADLINE

All copy for inclusion in the October 1987 issue of Amateur Radio, including regular columns and Hamads, must arrive at PO Box 300, Caulfield South, Vic. 3162, at the latest, by 9 am, August 20, 1987.

Amateur Radio

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Material should be sent direct to **PO Box 300, Caulfield South, Vic. 3162**, by the 20th day of the second month preceding publication. Note: Some months are a few days earlier in the way the days fall. Check page 1 for deadline dates. Phone: (03) 528 5962.

HAMADS should be sent direct to the same address, by the same date.

Acknowledgment may not be made unless specifically requested. All important items should be sent by Certified Mail. The Editor reserves the right to edit all material, including Letters to the Editor and Hamads, and reserves the right to refuse acceptance of any material, without specifying a reason.

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It is impossible for us to ensure the advertisements submitted for publication comply with the Trade Practices Act 1974. Therefore advertisers and advertising agents will appreciate the absolute need for themselves to ensure that the provisions of the Act are complied with strictly.

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Editor's Comment

WHERE DOES THE MONEY GO?

From time to time we are asked to publish the amounts of the various Divisional subscriptions. This is a subject about which some Divisions seem a little reticent, as indicated by the success (four votes to three) at the 1985 Federal Convention of a motion to prohibit publishing by any WIA publication of a comparative table of all States subscriptions. These vary considerably between States. It seemed a good idea to explain not only why, but also how the funds are spent.

Basically, the reason for the differences is that some Divisions provide more services to their members than do others. All have to support, equally, the Federal body by an amount of \$27 per member this year. So, adding to this enough to cover their own expenses, we find the Divisions asking from each full member a maximum (in VK3) of \$44 and a minimum (in VK4) of \$33. All amounts mentioned here are per member in 1987.

Federally, the biggest single cost is the publishing of AR (\$16.25). Our IARU subscription costs 75 cents. Everything else totals \$10.00, including salaries of office manager and staff. What do they do? Mainly, they look after the impressive volume of Executive and administrative correspondence to and from DOC, the Divisions, commercial suppliers, advertisers and members. They order and sell books (Magbooks). They receive and make many telephone calls. The cost of lighting, power, postage and the telephone service is substantial. More time goes into the continuing task of updating membership data and other information, for which each staff member has his own terminal into the office computer.

One significant area of Federal expense is the annual Federal Convention, (\$1.60). Executive is keenly aware, as are all the Federal Councilors, that some reduction here would be welcome, if it did not imply a corresponding reduction in the Institute's administrative coherence. Even in these days of sophisticated communication

systems using broadband interstate links there still seems no substitute for meeting face-to-face around the convention table. But it is noteworthy that VK4, because of the expense, did not hold a Clubs' Conference this year. Some VK4's may claim, as a result, that their representatives at the Federal Convention were less well-briefed than they might have been. The result of a similar Federal cancellation would, I suspect, be much more serious.

And what does your Division do with its share? This varies greatly from State to State. VK3 for example (on \$17 a head) has until very recently supported virtually all the State's 2-metre and 70-centimetre repeaters. Its outwards QSL bureau is free. It owns its own meeting room and office premises (as does VK2) and all the equipment used for the Sunday morning news broadcast, plus a considerable amount of VK3EN equipment. VK4, on the other hand, with only \$6 per year, owns no real-estate and depends on privately-owned equipment for its broadcast arrangements.

Some people might argue, in spite of these divergences, that the range of services to members does not vary commensurately. Obviously VK4 depends much more on Club and volunteer support than does VK3. But VK3, more than any other State, has its available pool of volunteers diminished by the Federal need for people. Some hold both Federal and Divisional office, but generally this is impractical.

As you see, we have in the WIA a complex organisation with many interstate differences, perhaps tending to reflect the Australian political scene and suffer from the same problems. Do we need State Governments? Do we need State Divisions? Should the Federal body have more influence? Or less? There are no simple answers, but one thing is certain. We can only have what we are willing to pay for.

Bill Rice VK3ABP Editor

Inserts for Amateur Radio

Many Divisions, Zones or Clubs make regular use, as a newsletter distribution facility, or to notify members of coming events, of the system whereby copies of AR can carry inserts, usually just for one State. This facility is provided by the mailing service organisation (Automail Pty Ltd) and the WIA Federal Office at a nominal cost.

In order to comply with postal regulations and WIA policy, it is necessary that all inserts should meet certain specifications. Some of these appear not to be very widely known, and this QSP has been put together to spread the information.

Sizes must be as follows:

Unfolded — Minimum 75 x 130 mm ...
Maximum 125 x 250 mm
Folded — Minimum as above ... Maximum 177 x 240 mm

The paper used should be bond, minimum 80 gsm, maximum 100 gsm.

Each Club submitting an insert must have it approved by their Division, then send a proof copy to the Editor for checking at least 14 days before the due date at Automail (see list below). The proof copy must be addressed via the Federal Office (PO Box 300, Caulfield

South, Vic. 3162) to ensure that the relevant account entries are made and Automail notified.

All inserts must carry the wording "Insert into Amateur Radio (month/year)". This is required by Australia Post regulations.

When approved, bulk inserts must then be sent to Automail Pty Ltd, 14-16 Stamford Road, Oakleigh East, Vic. 3166. Under no circumstances are Automail to be contacted directly by Clubs or Divisions, as all requests for inserts, bookings, etc, must be via the Federal Office.

Due dates for delivery to Automail for the remainder of 1987 are

September 1987	by August 20
October	by September 23
November	by October 21
December	by November 22
January 1988	by December 10

Neither the Federal Office nor Automail necessarily accept any responsibility for omission or incorrect insertion of inserts. Surplus inserts are returned to the office. If requested, they will be returned to the originators at the latter's expense, and otherwise destroyed.

TREASURER'S REPORT

Following the Federal Convention in May, I am pleased to place before you pertinent figures relating to year ended December 31, 1986, which have been audited by our Accountants, Touche Ross and Co.

The main highlights were:

CATEGORY	BUDGET	ACTUAL
TOTAL INCOME	+ \$230 000	+ \$234 000
TOTAL OFFICE EXPENDITURE	— \$130 000	— \$121 000
TOTAL AMATEUR RADIO MAGAZINE	— \$100 000	— \$111 000

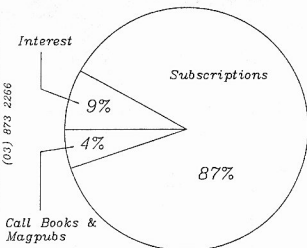
We had a surplus in 1986 amounting to approximately \$2000, and in 1985 a loss of approximately \$1000. We are satisfied with the final outcome for 1986.

Abridged Balance Sheet as at December 31, 1986

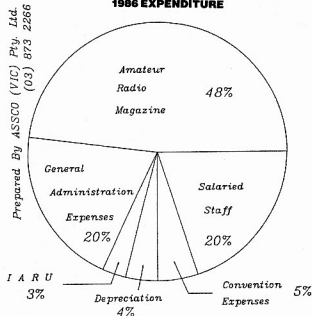
Current Assets	\$191 000	Deposits \$165 000, Trade Debtors \$10 000, remainder spread
Fixed Assets	\$ 25 000	Office equipment, furniture (valued at \$53 000 in 1983, but since depreciated by \$28 000 eg computer)
	<u>\$216 000</u>	
Current Liabilities	\$142 000	Subscriptions in Advance \$107 000, Amounts payable to Divisions \$22 000, Trade Creditors \$5 000, remainder spread
	<u>\$ 74 000</u>	
Members' Funds	\$ 74 000	
Working Capital	\$191 000	
Current Assets less Current Liabilities	<u>\$ 49 000</u>	

This amount is the cash resource held to meet our future commitments

1986 INCOME



1986 EXPENDITURE



We perceive however, that looking in to year 1987, there are some ominous signs emerging in figures relating to income and expenditure. They require immediate attention which will affect all of us as members of the WIA in terms of a drop in standard in some of the services offered. If these steps are not implemented now to cut expenditure and increase income, we have calculated a deficiency of \$30 000 in 1987 and possibly a similar result in 1988. We do not have the financial resources to meet such an eventuality and steps are being taken now to get our finances in order for 1987 with a view to going into 1988 with hopefully a balanced budget being achieved as at 31/12/88. In 1987 we expect a loss of around \$16/20 000 with the above measures being put into place. With time against us it may be difficult to achieve a better result.

The reasons for these problems emerging are:

- 1 Membership is dropping with less income anticipated.
- 2 Advertising has decreased significantly and in money terms could reduce by 25 percent. One of the reasons for this decrease is cost of amateur equipment caused by the devaluation of the Australian Dollar against the Japanese Yen. Approximately 18 months ago \$A1 could buy say 200 Yen, today it is about 100. Consequently amateurs are not buying the equipment they were in the past, and therefore advertisers are cutting back on their advertising budgets.
- 3 Cost of insurance, eg Workcare, wages, high interest rates, fringe benefits tax and other increased costs caused by inflation at around nine percent are effectively passed on to us and have to be absorbed into our finances. These costs are passed on to us by the companies with whom we deal.
- 4 We use a considerable quantity of paper, eg Amateur Radio Magazine, photocopying, etc. Cost of paper has risen by 20 to 30 percent and is affecting our finances considerably.

At the May Convention it was recommended by the Financial Subcommittee that the Federal Element of the subscription be increased from \$27 to \$30 for 1988. This increase should cover the inflation rate but is not nearly enough to meet all increased costs. That is why we must also cut out expenditure and try to increase our income to keep our "finance house" in order for the future.

We expect the next 12 to 24 months to be tough and your support and understanding of the foregoing situation will be appreciated. Should members require the detailed audited Financial Statements of foregoing figures for 1986 including my Report tabled at the Convention, please write to the Federal Office.

73 Ross Burstall VK3CRB
HONORARY FEDERAL TREASURER

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TR-751A 2 METERS
TR-851A 70CM

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SUPER COMPACT MOBILE
TM-221A 2 METERS
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VHF-UHF BUILDING BLOCKS

Part 1

John Day VK3ZJF

5-7 Old Warrandyte Road, Donvale, Vic. 3111

This article is the first of a new series of designs for home-brewed amateur equipment for the VHF and UHF bands. During the design phase, the writer has consulted closely with Harold VK3AFQ, to ensure these efforts will be as compatible as possible.

With the increasing prices for commercial amateur equipment in recent times there has been a marked increase in home-brewing. It became obvious that if I wanted good equipment at a reasonable price I would have to build it myself. What began as a simple exercise to build a new six-metre transceiver has, through the interest of others, turned into a major design and construction project absorbing 18 months of spare time and appears set to continue for some time to come.

First, let us lay down some of the ground rules, then we shall look at what is in store for constructors.

DESIGN RULES

At the outset, several major guidelines had to be decided upon and adhered to throughout the project.

- 1 The mechanical size of the boards is 6 x 1.5 inches (150 x 38 mm) compatible with the VK3AFQ building block format.
- 2 The power supply for all modules operating at outputs of +7 dBw (five watts) or less should be 12 volts \pm 10 percent. For modules operating at outputs in excess of this the power supply should be 28-30 volts, moderately regulated.
- 3 Any RF signal entering or leaving a module should do so at 50 ohms.
- 4 State of the art components and techniques should be used where possible, dependent on local availability.

Throughout this series power levels will be quoted in dBm (dB above 1 milliwatt into 50 ohms), dBw (dB above 1 watt into 50 ohms) and relative levels in dBc (dB relative to desired carrier).

Whilst it may seem unusual to mention impedance levels for external connections, if the modules are to be generally and easily applicable in a variety of situations this is desirable.

The use of state-of-the-art components and techniques poses a series of interesting problems. In this series, the latest technology readily available in this country, has been used. The availability of components has been thoroughly investigated and where necessary, sources will be identified.

THE MODULES

Detailed circuits and discussion relating to each of the modules will be given as this series progresses. The brief description, features and

some possible applications of the modules are printed hereunder for your interest.

MODULE A — TWO-METRE 100 mW TRANSVERTER

This module consists of three 6 x 1.5 inch (150 x 38 mm) boards, incorporating the injection oscillator chain, the receive converter and the transmit converter.

The receive converter uses a BF981 dual gate MosFET preamplifier for low noise, followed by a diode double balanced mixer. Broadband termination for the mixer is provided by a grounded gate JFET stage with a 50 ohm input impedance, a tuned circuit in the drain provides some IF selectivity. An IF change-over relay is provided on this board.

On the transmit converter board, provision is made for an IF attenuator capable of handling up to five-watts. Following this, another diode double balanced mixer is used followed by a narrow tuned circuit filter and a two stage amplifier using a BF981 and a BFR96S high gain bi-polar transistor.

The injection module consists of a third overtone crystal oscillator, a diode frequency doubler and an amplifier to generate the required levels of mixer injection. This module can be used over a wide frequency range for a variety of applications.

As a bonus, this module will be described for 50-54 MHz as well as 28-30 MHz IFs.

MODULE B — SIX-METRE 500 mW TRANSVERTER

Again the complete transverter uses three PCB modules. The receive and transmit converters are similar to the 144 MHz unit and the injection chain will be described in two versions to suit various IF frequencies.

The six-metre transverter can be used with either a 28-30 MHz or 144-148 MHz IF; so not only can it be used with a HF transceiver but why not think about getting your two-metre multi-mode transceiver on 6 metres?

MODULE C & D — 70 cm 100 mW TRANSVERTER

This module has proved to be the most difficult design problem of the whole series. The two versions will be described, the first for 50-54 MHz or 28-30 MHz IFs and the second, a more complicated dual-conversion unit for a 144-148 MHz IF. This module will probably be left until late in the series to allow time to further develop some improvements to the existing prototype.

MODULE TWO — TWO-METRE 2 WATT LINEAR AMPLIFIER

This module is designed to provide a more usable power output from the transverter, provides an output change-over relay and makes provision for controlling external preamplifiers and power amplifiers.

MODULE F — SIX-METRE 5 WATT LINEAR AMPLIFIER

This module is the six-metre version of Module E, described above.

MODULE G — SIX-METRE TRANSCEIVER INJECTION CHAIN

By now some of you may be thinking of building a self-contained low power transceiver to power all of the transverters you will no doubt build! Well, this is what is required. Build the complete IF sections of the VK3AFQ building blocks, then add this variable reference synthesised VFO to make it into a 'native' 50-54 MHz transceiver for driving transverters or to catch some six-metre DX.

It is proposed to describe a similar unit for a 144-148 MHz transceiver at a later date, if interest warrants.

MODULE H — 150 WATT TWO-METRE POWER AMPLIFIER

Using the latest RF Power MosFET technology allows construction of a two-stage, two watt input/150 watt output power amplifier that will leave most bi-polar power amplifiers looking a little green and rivaling the signal quality of many good valve power amplifiers. Although the devices are not cheap at this stage they certainly represent excellent value. The first stage produces approximately 30 watts out and can be used on its own if required.

MODULE I — 150 WATT SIX-METRE POWER AMPLIFIER

This is the six-metre version of Module H.

All of the power amplifiers are fitted with detectors for power indication and to permit driving an Automatic Level Control loop. The VK3AFQ transceiver is provided with a transmit ALC input compatible with these designs. By using ALC, the amplifiers can be operated well within ratings at peak linearity and performance when properly tuned and aligned. These amplifiers are easy to align and appear to perform excellently on the air. They have been personally used on six and two-metres over several months.

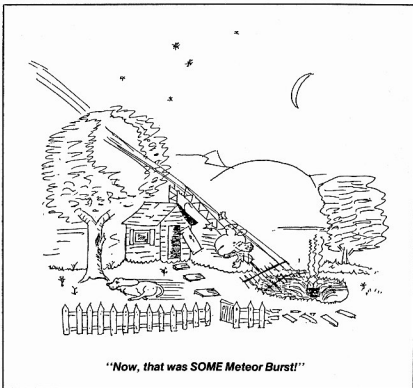
Detailed descriptions of these modules will commence in the next issue of *Amateur Radio*.

TWO METRE METEOR SCATTER

Doug McArthur VK3UM

30 Rollaway Rise, Chirnside Park, Vic, 3116

Meteor Scatter is an under-utilised mode of propagation available to the VHF and UHF operator.



"Now, that was SOME Meteor Burst!"

When using this mode the ability to complete QSOs are not only dependent upon the stations technical capability (which can be relatively modest), but depends upon rigidly followed operating procedures.

The object of this article is to promote the mode, through the establishment of a National Two Metre Meteor Scatter Calling Frequency, along with the definition of a sequencing and calling procedure.

The article provides the basis of a national scheme, which will allow stations to complete QSOs via Meteor Scatter in the shortest possible time using sporadic meteors.

METEORS

The size of meteors that are of most interest for radio communications do not have to be as large as that of a 'falling star.' In fact, the numerous non-visible meteors, which range in size from 40 microns to eight centimetres in diameter, produce radio reflections.

Meteors entering the Earth's upper atmosphere can be characterised into two distinct classes.

Shower meteors are collections of particles orbiting the Sun all at the same velocity. Their relatively well-defined orbits allow for the prediction of when such showers will intersect the Earth's orbit. Their velocity and radiant, in terms of right ascension and declination (celestial latitude and longitude), have been catalogued. (ARRL VHF Handbook, Refer Table 1).

Meteor showers are generally named after the stellar constellations which, when viewed from Earth, form the background from which the radiant appears to originate.

As an example, the Leonid Meteor shower appears to originate from the constellation of Leo.

It is important to note that, for us in the Southern Hemisphere, this is not the case as the radiant point, although the same will, in fact, not appear from the same constellation.

Meteors vary in intensity from year to year and to predict the intensity of the shower or the exact time it will reach its peak, is not always possible. The Quadrantids (January) and Perseids (August) however show only slight variations in intensity from year to year but again to predict their peak is difficult. Unfortunately, scant information is available for the Southern Hemisphere with respect to shower meteors and the data listed is for the Northern Hemisphere.

Sporadic meteors are those that move in random orbits about the Sun and all are distributed throughout the year. They have no defined radiant nor predictable velocity. It is these sporadic meteors that the amateur can utilise daily.

True, shower meteors will provide short time excitement, but their time of arrival is difficult to define. Some showers may only last a few hours and being there at the time is a game of chance. Shower meteors can provide spectacular results on the lower VHF bands and are essential for those who wish to use this mode on 432 MHz (and higher) frequencies.

Meteors enter the upper ionosphere at a height of 80-120 kilometres and commence to burn rapidly. An ionised trail is formed as a result of the kinetic energy (of the meteor) which is converted to potential energy as the

meteor is slowed by collisions with neutral molecules. The ionisation takes the form of a long thin column whose electron density is proportional to the mass of the meteor. The length of this trail is also dependent upon the mass of the meteor, its velocity and the angle of entry into the ionosphere. Additionally, the action of winds at this altitude, (which can be very strong), will deform the rapidly decaying trail. Trails can range up to 50 kilometres in length although typical lengths are about 15 kilometres. Space 'junk' re-entering the atmosphere will leave behind a similar trail.

The cone of this trail is most dense at the point of entry. As a consequence the reflected radio signal is characterised by a strong initial burst and if the trail is of a reasonable size the signal diminishes slowly. Hence the term of a meteor burst or a meteor ping. Thus the meteor's size, speed and direction of travel (dependent upon the zenith angle of entry) will primarily determine the received signal strength and duration of possible communication between specific communication sites.

The optimum frequency for the use of meteor scatter is in the 35-45 MHz region. Meteor scatter links are still used to complement forward ionospheric scatter in some remote parts of the world and provide a reliable communication mode. The signal strength is inversely proportional to the cube of the frequency and this equates to about an 8 dB reduction of signal level if the frequency is doubled. The density of the ionisation is greatest at the commencement of the meteors entry into the atmosphere and consequently if the meteor is small, only a proportion of this trail may be detected. In practical terms, a meteor burst heard on 50 MHz would be about three times the length of that received on 144 MHz. The same relationship exists between 144 and 432 MHz. A change of operating techniques is therefore required for 432 MHz and above as the challenge of making QSOs becomes quite daunting as the burst durations will be in the order of tens of milliseconds.

DISTANCE OF POSSIBLE COMMUNICATIONS

Meteors commence to burn at about the height of the 'E Layer' and consequently the distance that can be worked is similar to that of a single hop from the 'E Layer'. Multi-hop 'E Layer' communication is not practical as the amount of energy scattered from the ionised trail is too small to support a second hop. Further, the possibility of, at that very time, having two trails in the optimum place is quite remote. It is feasible, during a very dense meteor shower, that this could be possible but to my knowledge such an incident is, as yet, to be recorded. Consequently the maximum distance is approximately 2000 kilometres. Forward scatter signals can be greatly enhanced by meteor

Meteor Showers Table I—Meteor Shower Data for V.H.F. Use

Shower and Date	Time Visible		Optimum Paths and Times				Hourly Rate		Velocity, km/sec.	Period, Years	Next Maximum
	Rise	Set	N-S	NW-SE	E-W	SW-NE	Visual	Radio			
* January 3-5 Quadrantids	2300	1800	—	0300-0800 SW	0800-0900 S	0900-1400 SE	35	45	45	7	Note 1
January 17 Cygnids	0230	2130	—	0600-1100 SW	1100-1300 S	1300-1800 SE	—	—	—	—	—
February 5-10 Aurigids	1200	0330	—	1400-1730 SW	—	2130-0100 SE	—	—	—	—	—
March 10-12 Bootids	2200	0830	2330-0030 W 0530-0630 E	0330-0530 NE	0230-0330 N	0030-0230 NW	—	—	—	—	—
March 20 Coma Berenices	1800	0630	2130-2300 W 0100-0300 E	2000-2130 SW	—	0300-0430 SE	—	—	—	—	—
* April 19-23 Lyrids	2100	1100	0230 W 0530 E	2330-0100 SW	—	0700-0830 SE	8	12	51	415	Note 1
* May 1-6 Aquarids	0300	1200	—	0830-1000 NE	0630-0830 N	0500-0630 NW	12	12	66	76	Note 1
May 11-24 Herculis	1800	0630	2130-2300 W 0100-0300 E	2000-2130 SW	—	0300-0430 SE	—	—	—	—	—
May 30 Perseids	2300	1200	0300-0430 W 0630-0800 E	0130-0300 SW	—	0800-0930 SE	—	—	—	—	—
June 2-17 Scorpids	2000	0300	—	0100 NE	2300-2400 N	2200 NW	—	—	—	—	—
June 27-30 Pons Winnecke	Does not set; min. at 0900	—	—	1500-1830 SW	1830-2330 S	2330-0300 SE	—	—	—	—	—
July 14 Cygnids	1800	1000	—	2100-2330 SW	0130 S	0330-0600 SE	—	—	—	—	—
July 18-30 Capricornids	2030	0400	—	0100-0200 NE	2300-0100 N	2200-2300 NW	—	—	—	—	—
* July 26-31 Aquarids	2200	0600	—	0300-0500 NE	0100-0300 N	0000-0100 NW	10	22	50	3.6	Note 1
* July 27-August 14 Perseids	Does not set; min. at 1730	—	—	2330-0300 SW	0300-0800 S	0800-1130 SE	50	50	61	120	Note 1
August 10-20 Cygnids	1200	0700	—	1700-1930 SW	2130 S	2330-0200 SE	—	—	—	—	—
August 21-23 Draconids	Does not set; min. at 0900	—	—	1500-1830 SW	1830-2330 S	2330-0300 SE	—	—	—	—	—
August 21-31 Draconids	Does not set; min. at 0700	—	—	1300-1630 SW	1630-2130 S	2130-0100 SE	—	—	—	—	—
September 7-15 Perseids	2130	1200	—	0030-0200 SW	—	0700-0830 SE	—	—	—	—	—
September 22 Aurigids	2100	1230	—	0030-0200 SW	—	0700-0830 SE	—	—	—	—	—
October 2 Quadrantids	0500	0000	—	0900-1400 SW	1400-1500 S	1500-2000 SE	—	—	—	—	—
October 9 Giacobinids	0600	0300	—	1100-1600 SW	1600-1700 S	1700-2200 SE	Note 2	20	6.6	1972	
October 12-23 Arietids	1900	0700	2130-2330 W 0230-0430 E	—	—	—	—	—	—	—	—
* October 18-23 Orionids	2230	0930	0000-0200 W 0600-0800 E	0430-0600 NE	0330-0430 N	0200-0330 NW	15	30	68	76	Note 1
* Oct. 26-Nov. 16 Taurids	1900	0630	2100-2300 W 0300-0500 E	0130-0300 NE	0030-0130 N	2300-0030 NW	10	16	27	3.3	Note 1
* November 14-18 Leonids	0000	1230	0300-0500 W 0800-1000 E	—	—	—	12	Note 3	72	33.2	1999
November 22-30 Andromedids	1300	0600	—	1600-2000 SW	—	2300-0300 SE	Note 4	22	6.7	1977	
* December 10-14 Geminids	1900	0900	0030 W 0330 E	2130-2300 SW	—	0500-0630 SE	60	70	35	1.6	Note 1
* December 22 Ursids	Does not set; min. at 2030	—	—	—	0130-1530 S	—	13	13	38	13.5	1972, 1985
* May 19-21 Cetus	0530	1430	—	1100-1230 NE	0900-1100 N	0730-0900 NW	—	—	20	37	—
* June 4-6 Perseids	0500	1730	0800-1000 W 1300-1500 E	—	—	—	—	—	40	29	—
* June 8 Arietids	0330	1530	0600-0800 W 1100-1300 E	—	—	—	Note 6	70	38	—	
* June 30-July 2 Taurids	0500	1700	0700-0900 W 1300-1500 E	1130-1300 NE	1030-1130 N	0900-1030 NW	—	—	30	31	—

* Major showers—Last four are daylight showers.

Times given are local standard at path midpoint

NOTES

- These streams are evenly distributed and little year to year variation is to be expected.
- Very concentrated stream. Peak years give up to 400 meteors per minute, but with duration of only 6 hours. 1946 peak was most concentrated shower in amateur radio experience up to that time (see December, 1946, QST, page 43) but 1959 recurrence was deflected and was hardly observable.
- Peak years give 60/hour visual. In the peak years of the 1800s, prior to being deflected by Jupiter and Saturn, this shower gave 1200 per minute. Spectacular results in 1965 and 1966 are reported in Jan. 1966 QST, page 80, and Jan. 1967, page 83.
- Before being deflected by Jupiter this stream gave peak year rates of 100/minute. No notable rates have been observed since, though the stream could return.
- Short duration shower. Peak years the radio rate is 165/hour.
- This intense daylight shower begins June 2 and runs to June 14 with radio rates from 25 to 70/hour.

Meteor Shower Data for VHF use.

(Courtesy of ARRL VHF Handbook)

scatter and, in typical high power VHF commercial circuits, the very small meteors are utilised. In amateur circles the generation of such power, coupled to very high gain antennas (low radiation angle), generally places such transmissions beyond our licensing conditions. The amateur is thus faced with using the larger meteors which, in their wake, provide a high degree of ionisation. The signal levels can be quite high but their duration can be equally as short. Daunting though this may first appear, contacts can be made quite easily (on VHF) with patience and defined operating procedures. Contacts have, in fact, been accomplished overseas (Canada) on 1296 MHz by stations using EME commensurate equipment.

The writer first became interested in this medium of communication in the early 1960s whilst living in Alice Springs (VK5KK and later VK8KK). Using a modest set-up I used to monitor the vision carriers of the various Channel 2 television transmissions and was surprised at the consistency and level of the forward scatter signals. It was rare that signals could not be detected. On top of the residual forward scatter, meteor bursts were, to say the least, impressive and the signal level, regularly exceeded S9.

These initial experiments led to tests being conducted on 50 MHz with Ray VK3ATN, Mick VK5ZDR, Col VK5RO, John VK5DJ and David VK4AK, (then at Mount Isa, but now VK3AUU). Incidentally, it was during these initial tests with Ray VK3ATN, that he tried his HF European Rhombic on 50 MHz. The dramatic results achieved with this antenna subsequently led him on to constructing a two-metre stacked Rhombic with which he achieved the first ever VK Moon Bounce QSOs. (A milestone in our amateur radio history). Later, when I moved to Darwin (1968-1975) these experiments were continued with David (who had then moved to Tennant Creek with the call of VK8AU) and Ross VK4RO, at Ayr. Countless QSOs were made via 52 MHz Meteor Scatter during this period.

Well, 50 MHz is a breeze!! Bursts lasting well over a minute are common and overlapping bursts are a bonus.

As mentioned earlier, as the frequency increases the duration of the burst decreases and at 144 MHz communication starts to become more of a challenge. The burst here has shortened to about a third of the 50 MHz signal although the peak signal remains about the same.

OPTIMUM TIMES TO WORK METEOR SCATTER

The *ARRL VHF Handbook*, and other publications, list tables of the known meteor showers. Unfortunately for us in the Southern Hemisphere this data will not necessarily coincide with respect to local times, and optimum path angles. Moreover, not all showers will be visible in the Southern Hemisphere as appear in the Northern Hemisphere. The Perseids (July 27 to August 14), Gemindis (December 10 to 14) and Quadrantids (January 3 to 5), seem to bear a relationship to this published data. Very little information is available for the Southern Hemisphere and accordingly, the tables, as published, should be treated as a guide to the shorter duration meteor showers. A typical dispersion of meteor shower activity is shown in Figure 1.

Local Astronomical Yearbooks do provide information on the visual showers but, although helpful, do not provide detail of the nature contained in the *ARRL VHF Handbook*.

Fortunately it can be predicted that, for sporadic meteors, the best time is when your location is travelling at right angles to the

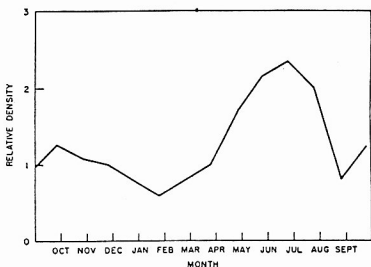


Figure 1:

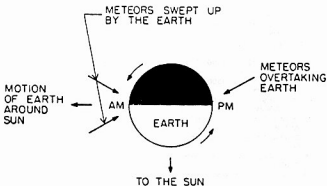


Figure 2:

Earth's motion. At this time you will be 'facing into space' and the number of sporadic meteors will be at their maximum. This time coincides with dawn and the best period is about one and a half hours before to about one hour after sunrise. (Refer Figure 2).

Twice a year, and for a period of several days, we intercept the remnants of Halley's Comet. These showers occur in the first week of May (Aquirids) and the third week of October (Orionids) and these days provide meteor showers of significant proportions. (Refer Figure 3).

Due to the Earth's orbit and the nature of the space debris, the intensity of such showers will vary from year to year. Notwithstanding such variations, they do provide an exciting time for

the meteor scatter enthusiast. Many other meteor showers exist and, although, as mentioned earlier, they are documented for the Northern Hemisphere, it is difficult to relate them to our situation. Additionally, it would seem reasonable to assume that we may experience meteor showers of intensities greater than those located to our north. Perhaps some reader may be able to assist with such information.

You will, I hasten to add, hear sporadic meteor pings throughout the day but their frequency will be greatly diminished. Space junk returning to Earth may provide a 'space junk ping' in the same way as a meteor (not that you will be able to tell the difference!). It is worth remembering that you do not require a

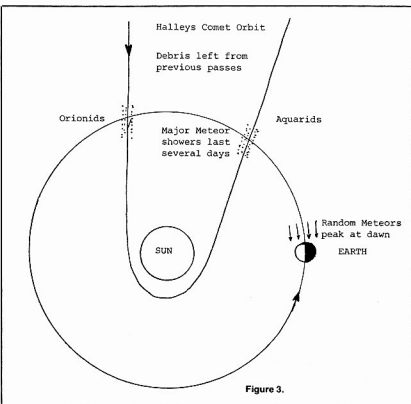


Figure 3.

meteor of the size of the visual falling-star to provide communication. Meteors of this size would provide a classic one-minute-plus burst (on 144 MHz), but the smaller ones, the size of a grain of sand (or smaller) and not visible to the naked eye, are all that is required to utilise this communication mode.

I have spent many hours standing outside the shack window peering into the darkness whilst listening to the pings from a distant station. It is rare that you see the ones that provide the signal, but when you do they are the ones that block your receiver, cause the speaker to leap off the bench and the family to come running to see what caused the noise.

EQUIPMENT REQUIREMENTS

As discussed earlier, the signal characteristics of a meteor burst is that of a strong leading edge with a tail diminishing rapidly over a variable length of time. The initial burst can be extremely strong (exceeding S9) but equally it can be very short to the extent that all you hear is half a syllable. The length of the tail is what we are interested in to provide a QSO. A listener will quickly detect short meteor pings for up to one second (on two-metres), but patience is required to make a QSO. Extending the period of the tail with increased effective radiated power (EIRP) and increasing the receiver sensitivity is essential. However, a modestly equipped two-metre station running 100 watts output to 12 dB of antenna gain and a receiving system with a 1 dB or less noise figure is adequate (with patience) to work similarly equipped stations.

Meteors entering the ionosphere do so at varying angles and, as such, it would be an advantage to aim the antenna towards the expected trail. Nevertheless, the height of the meteor trail requires a very low radiation angle to obtain the maximum usable distance of

communication. Conversely, as the zenith angle of the meteor is random, knowing where to aim a high gain antenna with a low angle of radiation is a problem. What one would like to have is an antenna beam width of 60 degrees, gain of 15 dB, and a radiation angle of less than two degrees!!! In practice, noting the scant data available for the Southern Hemisphere, it is best to beam directly towards the distant station. (Great circle bearing).

The speed of the meteor, relative to each station, dictates that Doppler shift will occur on the incoming signal. On 50 and 144 MHz this is relatively small and generally will not be noticed. If you listen very carefully the Doppler is most evident at the commencement of the burst. This can, when you are attempting to net a station on very short pings, cause you to be a little off frequency.

OPERATING TECHNIQUES

Recently, a National Two Metre Meteor Scatter Calling Frequency of 144.350 MHz USB has been chosen. The choice was made to avoid spurs and such problems which are encountered from Channel 5A. Hopefully, with activity, it will become another 144.100 MHz, but devoid of 'locals' rag-chewing on the channel!!!

There are a few basic rules to observe when entering into this mode and foremost is the aspect of frequency accuracy. In Melbourne, most are fortunate to be able to receive and calibrate their equipment using VNG's harmonic on 144.000 MHz, however, this service, used by so many for various reasons, will cease on March 31, next year (or earlier), unless some dedicated government department or benevolent organisation comes to the fore. The digital displays of most transceivers are, however, accurate to within 1 kHz. If you wish to instigate a spirited debate raise the frequency accuracy question aboard air!

Regardless of those who may claim accuracy to the nearest 10 Hz(!) — it does not matter too much as you will be able to net the distant station given 15 minutes of patient listening. It is important that frequency stability is maintained during your operating period. It may be an advantage to leave the equipment on overnight to thermally stabilise prior to commencing a meteor scatter session. If you can disable the AGC, this too is an advantage, as the initial burst is more than likely to block the receiver and, in so doing, cause you to miss the tail of the signal.

It is also essential that the 'Master Station' does not attempt to net the 'Calling Station' otherwise it will become a 'leap-frogging' dual, with all participants finishing nowhere!

Similarly, if a partial exchange has been made, the 'Calling Station' (if they find themselves to be a little off frequency), should not net the 'Master Station' as it is reasonable to expect he already has you resolved and a further frequency shift will only add to the confusion. Net the frequency as accurately as possible and then use your receiver's incremental tuning (RIT) to resolve the other station.

The above comments are orientated towards SSB. Overseas, high speed CW has proved popular. Europeans, for example, on 432 MHz transmit very high speed CW, record the received signals and replay them at a reduced speed. Naturally this introduces a delay in responding to a calling station during this 'decoding' process but, at this frequency, the burst length is so short as to require this procedure. Providing the QSO is completed within the same day, it is quite valid!!!

This would seem to be a total 'off-put' to a prospective new Meteor Scatter operator however, it is not nearly that difficult for 50 or 144 MHz operators. Six metres is 'easy' and this article is aligned towards the 'Two Metre Band Enthusiasts' as this mode has not been greatly utilised in this country.

Overseas stations have preferred to transmit sequence periods of five, two, and-a-half, two, one or even less than one minute for CW and SSB. The communication rate is slow under such sequencing. Invariably, when a long burst (15 seconds) is received, it will fall in the middle of the distant stations sequence. It also follows that a further burst may not occur for some time and it may again occur during a transmission sequence, leaving you unheard at the distant end!

Recently, I have developed a means that uses a little hardware to overcome the obvious tedious requirement of fast sequencing. This method was chosen to allow modestly equipped SSB stations, with little experience in the mode, to become successfully involved by making QSOs without spending an exorbitant time at the rig.

The object here is to intercept the burst during the transitional period when going from transmit and receive, hopefully completing the QSO during the one burst.

Observations have shown that, during a non-meteor shower period (and around dawn), you will, on average, receive about three 10 second or longer bursts, in a one hour period. Thus you should be able to work three stations per hour! Some operators may scoff at this aspect but for the dedicated VHF/UHF operator to regularly work distances of up to 2000 kilometres is an achievement.

Time is deceptive. A great deal can be said in five seconds. Two stations, with fast footwork, or is it 'tongue-work', can complete a total exchange and confirmation in less than 10 seconds. This is not the mode to provide your name, QTH, rig and family tree details! Choose your words carefully, abbreviate where you can and success will be achieved. Plan ahead when you need to say and the order you will respond

when the time comes. Rest assured you will be caught by surprise and become confused at first. This is natural and you will improve with time and practice.

It is reasonable to ask how you can keep this short sequencing going for long periods, assuming that the calling sequence has been set at five seconds, without developing repetitive strain injury on CW, or laryngitis on SSB. In the latter case, your fate may well have been decided by your wife as calling CQ each and every 10 seconds at 0530 in the morning, can be a health hazard!

On October 28, 1985, a meteor scatter experiment took place, with some 20 participating operators who were divided into groups of two or three operators. Each group were 'allocated' selected frequencies commensurate with adjacent channel interference and compatibility. Liaison was established on 3.690 MHz to allow a check-in before the tests to ensure that their partner stations were 'on-deck' and ready to proceed. The results of the test were impressive (although predictable) as nearly all of those who participated completed their QSOs.

Contacts were made between VK1 and VK7, between VK2 and VK3, VK3 and VK4. On this occasion all participants used 10 second SSB sequencing. Needless to say, there were many who had sore throats that morning. The enthusiasm created by the test with those unfamiliar with this aspect of operating was gratifying and most wanted to try again at a future date. Incidentally, the morning chosen was supposed to be a peak of a meteor shower but this proved elusive and all contacts were made from sporadic meteors. Somehow, we never did get around to set up another test!

An electronic aid was the obvious answer to overcome the laborious calling and reply sequences. Although with a computer may generate CW and it is not difficult to interface this to your transmitter to generate the sequence timing required. Nevertheless, it is the SSB mode that provides a greater communication speed and this is discussed in detail below.

DIGITAL VOICE STORE

I had been contemplating a method of sending five-second SSB sequences for some time. The endless tape method was tried and discarded because of the difficulty of accurate timing, and the inevitable RFI problems. The 30-second tapes always seemed to be 32 or 28 seconds, when run on my recorder. Obviously if you could adjust the speed of the recorder to match the tape you could overcome the problem but it was decided the effort was not worth pursuing.

Thought turned to digitally storing a message on the computer, but it was not convenient to tie up the 'big box' for long periods. Besides, it has the habit of generating spurious signals on the 144 MHz band.

What was needed was a simple stand-alone analogue-to-digital conversion store into memory, and a complementary digital to analogue back end. A design had been established when, low and behold, *Electronics Australia* in the February 1987 edition, published the basis of just what was needed and with the added bonus of a PCB layout. With the assistance of Peter VK3AZL, who quickly produced the main PCB, it was put together without any drama. Several 64k memory boards were on hand from a now unused 609 computer system and one of these provided the memory required, in lieu of the original design.

There are several sampling rates available with the *Electronics Australia* design. The most attractive, consisted of a 9 kHz bandwidth, 4.1 seconds of voice storage using 62k of RAM was chosen, not for the bandwidth, [excessive for SSB], but for the time of 4.1 seconds. This was ideal for a five-second sequence.

The original EA design incorporated a 4 MHz

crystal for timing which could be divided to provide a 10 second pulse to initiate the replay sequence. Unfortunately, in my case, it was found that the crystal was considerably low in frequency and the supposedly 10 second pulses were invariably at 10.2 second periods. This is quite significant as the time slip became a nuisance over a one-hour period. Again the answer was simply overcome by using the mains to control the timing. This has proven to be quite precise for the accuracy required. 'Resetting' the device initially to the standard VNG time, it will stay correct throughout the day.

As an added feature, it was decided to add a Morse 'K' tail to the Digital Sound Store. Again this feature is locked to the internal timing and aurally provides an indication to the distant station that the station is going to the receive mode. Another adjunct was the adding (as an alternative to the 'K'), of a CW 'Z'. This feature was to alert a distant station that an unidentified signal had been heard and/or more information was required. The question mark tail (. . .) is sent for two minutes following the unidentified burst and the system reverts to the 'K' call. Further applications of this 'tail' will be detailed later in this article.

When an identified signal is heard (the operator should have the microphone in their hand and ready), the P action disables the Sound Store and the QSO is initiated. Should the contact not be completed in that particular burst, the Sound Store is quickly changed to send the appropriate response required.

REPORTING SYSTEM

There are various schools of thought and methods being used to exchange reports when working via Meteor Scatter. Some use the Moon Bounce system (EME). Even this can be confusing because there are currently two systems in use, one being the 144 MHz method and the other as used on 432 MHz and higher frequencies. The 432 MHz and above systems use the T, M and O reporting scheme where the T is sent repeatedly during the last 30 seconds of the sequence to indicate that only bits of the signal have been received. The M indicates that only parts of the signal have been received whilst O is used for indicating full call signs have been received. Additionally, a repeated Y is used to signify that the originator has received his call sign and repeat only yours and a G is used to signify that the originating operator is requesting a Grid Square reference (particularly useful for Grid Square hunters). The R character is sent along with the letter of the report to the initial response (eg RTTRT or RMRMR or RORORO vice received O). This method is followed by a complete sequence of RRRRRR and final confirmation given by a 737373 sequence. A valid QSO would be recorded with an M or O report combined with the following sequences. It is rare, in my case, to have had to resort to this reporting system unless signals are so weak that a simple 32N or similar report does not succeed. I do not favour this method for Meteor Scatter Propagation.

Another reporting system favours a S1, S2, or S3 where the numeral indicates the length of the burst; (eg S2 indicates a two second burst). Again the author does not favour this method of reporting for Meteor Scatter Propagation.

For simplicity, the conventional reporting system is favoured. This system is practical and easy to use, even though the signal reaches a large value then decays rapidly. There is no time to advise the other station that they are varying from 5x9 to 4x1. One has exchanged call signs and a report, which constitutes a valid report, and hence a QSO. It is suggested that the conventional system be adopted for the 50 and 144 MHz bands. Maybe those who will attempt a 432 MHz Meteor

Scatter QSO, may have to resort to adopting one of the previously described methods.

SEQUENCING

It is essential that one has an accurate time source at their disposal or one that they can adjust to a time signal prior to commencing a Meteor Scatter session.

The basis of a successful operation rests upon your, and the other station's, ability to maintain a precise time sequencing schedule.

The transmit sequences will commence at the even minute, termed zero sequence and at five seconds after the minute termed the five sequence. Thus a station transmitting the 'zero' sequence will call from 00 to 05, 10 to 15, 20 to 25, 30 to 35, 40 to 45 and 50 to 55 seconds after the minute. Conversely, a station transmitting the 'five' sequence will call from 05 to 10, 15 to 20, 25 to 30, 35 to 40, 45 to 50 and 55 to 60 seconds after the minute.

If you choose to build a Digital Sound Store along the lines previously described there is a deliberately in-built overlap for practical timing purposes. The Digital Sound Store provides 4.1 seconds of voice and the CW tail adds another 220 milliseconds. Additionally your transceiver has a finite period to change over and this brings the transmission length close to 4.5 seconds. This then provides half-a-second of extra receive time that may benefit the loss of data should both stations not be transmitting on their precise sequence.

In practice, it has been found that maintaining a half-second accuracy over a two-hour period to be readily achieved. Fundamentally, the accuracy is dependent upon the mains accuracy and your ability to release your 'set-time' button to coincide with a transmitted station.

If you do not have an automatic sending system then listen on 144.350 MHz and after a short time you will be able to distinguish from the timing of the bursts what sequencing the distant station is using and if the following beam heading recommendation is followed, approximately where the distant station is located. You will naturally respond during the opposite sequence.

It is suggested the following sequencing criteria should be adopted. **Stations beaming north or west, transmit during the 'zero' sequence.** **Stations beaming south or east, transmit during the 'five' sequence.'**

QSO PROCEDURE

The objective of the short sequencing procedure is to intercept a meteor burst of sufficient length to complete a QSO during the one burst. This is not too common on two-metres where shorter bursts are far more prevalent. Thus, the following call and response practice should be observed to avoid, where possible, confusion at the distant end.

The following examples will serve to explain what is required and for explanation purposes it is understood that the station calling CQ is the master station and the station responding to the call is the calling station.

(a) A station calling CQ

Your CQ should be spoken clearly, and quickly avoiding phonetics. Most operators can manage three CQs in the 4.1 second period. A station responding to the CQ should, after the CW tail, respond to the CQ's call sign, give their call sign with a report. The master station would respond with the calling station's call, QSL, and the report. The calling station would respond with 73.

To emphasise the short exchanges this is all that is required.

CQ VK3UM CQ VK3UM CQ VK3UM K

(Master station 4.5 seconds)

VK3UM VK4AGO 5n4 (Calling station)
VK4AGO QSL yr 5n3 (Master station)
QSL 73 (Calling station)
73 (Master station)

Note: ...5n4 refers to 5 and 4 or fifty four and yr relates to a quickly spoken 'your'.

A completed QSO in less than 10 seconds!
Five second sequencing is abandoned for the duration of the burst.

(b) The master station may not receive the full call sign of the calling station but, as an indication to the calling station that it is being heard, the CW tail is changed from 'K' to the question mark (. . . ? . . .). This is run for a two-minute period following the last burst. The question mark tail serves as an indication to the calling station that unidentified pieces are being received of their transmission.

(c) The master station identifies the calling station but fails to get their report. They would then change their CQ in the Voice Store to the following:

VK4AGO 5n4 VK4AGO 5n4 VK4AGO 5n4
. (4.5 second normal sequence).

Note that the CW tail (. . . ? . . .) indicates to the calling station that the master station **has not received their report** and the calling station would then respond in the other sequence **with only the report**. Call signs have been confirmed so are consequently not required;

(eg 5n3 5n3 5n3 5n3 5n3 5n3)
(Calling station 5 seconds per period).

(d) Once a contact has been initiated the combined sequencing of (a) and (c) should be employed as long as required to complete the QSO. It is essential not to jump a step otherwise you will confuse the other station. Normally the bursts are of sufficient length to

partially, if not fully complete, the QSO in one or two attempts. On long bursts it is possible to work two or more stations during one burst. The very common short bursts can be utilised, with patience and application of the above procedure, providing it is rigidly followed.

FINAL COMMENTS

Meteor Scatter may not be your cup of tea, but to a serious VHF/UHF enthusiast it is a further challenge. High power and very large antennas are not essential. QSOs are available for the taking, if you wish to participate.

Aircraft Enhancement is now commonly used and hundreds of QSOs have resulted from the original articles in AR. This has been a breath of fresh air to those who thought 'that there was no way they could work out of their mine shaft.' This mode has opened up the Melbourne-Canberra and Sydney paths, as well as the Sydney-Brisbane and Western Victoria-Adelaide paths. The two-metre and 70 cm bands have come alive again and activity is still on the increase.

You too can work up to 2000 kilometres on two-metres and the band does not have to be 'open' . . . only the shacks! Don't sit back and wait for next seasons Sporadic E, listen to the Meteor Scatter Frequency. Chances are that you will be most surprised at what you hear. Perhaps you too will be encouraged to give Two Metre Meteor Scatter a try!

NATIONAL TWO METRE CALLING FREQUENCY

Frequency	144.350 MHz Upper Sideband
Times	0600-0800 EST (2000-2200 UTC) Weekends or evenings at random
Sequence	North or West beaming stations transmit:

00-05, 10-15, 20-25, 30-35, 40-45, 50-55 seconds South or East beaming stations transmit: 05-10, 15-20, 25-30, 35-40, 45-50, 55-00 seconds Long bursts . . . use break-in
Liaison . . . 3.690 MHz

A further article will appear in AR describing the additional timing, control and CW generator board, (mentioned in this article), which is used in conjunction with the *Electronics Australia* Digital Sound Store. A PCB layout shall be included and the project uses easily obtained 74LS ICs.

ACKNOWLEDGMENTS

I would like to make special mention to the following amateurs that have participated in our Meteor Scatter Schedules, all of whom I have had the pleasure of working on many occasions by this type of propagation. They include Bill VK4LC, Angus VK4AGO, Rod VK4BRP, John VK2FG and Gordon VK2ZAB.

Additionally special thanks to Ian VK1BG, who has monitored the forward scatter signal, and meteor bursts, to collect further Aircraft Enhancement data and Ross VK2DVZ, whose present QTH precludes him from making a QSO, but relentlessly sends comprehensive reports of the observed meteor scatter bursts and duration.

Finally thanks to Roger VK2ZTB, who, as always, is a wealth of information and has supplied reference material of (2) and (3) as listed below.

REFERENCES

- 1 ARRL VHF Handbook
- 2 DAVIES, KENNETH. *Ionospheric Radio Propagation*, National Bureau of Standards Monograph 80.
- 3 HARRISON, ROGER. *6 UP Magazine*.

Repeater Reverse for the Yaesu FT-730R

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The Yaesu FT-730R is a popular FM-only UHF mobile rig, and in common with its cousin the FT-290R, lacks a repeater reverse facility, and incorporates a redundant CALL button instead.

This article shows how to adapt the famous modification for the FT-290R that turns the CALL button into a repeater reverse button. It is assumed that the reader is familiar with this modification. Perhaps it is not well-known that the tone call is still operative merely by pressing the PTT at the same time.

A quick summary of the modification is in order. When the CALL button is pressed burst switch Q2018 is switched on. This in turn activates the burst oscillator Q2019 and PTT switch Q2020. Whenever the PTT line is enabled pin 4 on the microprocessor Q2001 common to all the series is grounded via diode D2006, thereby shifting frequency by the appropriate offset. The modification grounds pin 4 through the CALL switch via an extra diode and prevents the tone oscillator from enabling PTT.

Now for the practical side. Unscrew the

bottom cover of the rig and disconnect the speaker wires to get them out of the way. The microprocessor is now quite visible. With the knobs facing you look for the wire coming from the pad marked B next to connector J04. Follow this to where it terminates close to the microprocessor. This wire is the CALL line. Locate the diode D2006 and solder the anode of another diode, 1N914 or similar, to the anode of D2006. The cathode is terminated on the pad of the aforementioned wire next to the microprocessor. Now, locate the connector in the top left hand corner, J01. Counting from the right there is one capacitor and three resistors just under it. Grit your teeth and cut the lead on the second resistor, R2080. Reassemble and test. Repeater reverse is now activated with the CALL button and if the tone call is desired it can be obtained by pressing PTT as well.

It is also worth mentioning that there is a simpler version of this modification if the tone call is not desired at all. Simply move that wire from where it terminates close to the microprocessor to the anode of diode D2006. This is the essence of the modification for the FT-230R that appeared in another place, but retaining the tone call is almost as easy.

Technical Editor's Note:
The technique of simulating PTT to the micro-

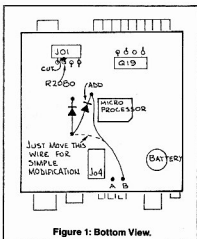


Figure 1: Bottom View.

processor to give reverse repeater on receive can be used on other brands and models. Many rigs use PTT information to cause the microprocessor to shift the PLL frequency for repeater operation.

BUILDING BLOCKS REVISITED

— Part 4

This article covers Module 2, the IF filter, and Module 9, the VFO.

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Before describing these modules in detail, some general comment on the IF crystal filter is called for.

Since the early 1960s the crystal filters used by amateurs have used the lattice configuration. The difficulties of 'home-brewing' this sort of filter were (and are) many, and the advent of commercially available units was welcomed with open arms!

The current advertised price of such filters is between \$A120 and \$A200. This is before import duty, sales tax and the dealers margin is added. These costs could add another \$A80 to \$A100 on your purchase.

With the above thoughts in mind and the prohibitive cost another type of filter configuration, known as the ladder filter, which is just as good as the lattice type, allows one to contemplate home-brewing with a minimum of trouble and expense.

The ladder type filter, so far as the writer can ascertain, surfaced during WWII where it was found in equipment used by the German armed forces. The technique fell into disuse after the war and did not reappear until the late 1970s. At this time there appeared, in the amateur literature, references to empirical experiments carried out using crystals intended mainly for the — then burgeoning — CB service.

It was not until the February 1979 issue of the RSGB magazine *Radio Communications* that an article appeared which put ladder filter design on a firm footing. It was written by J A Hardcastle G3JIR. Those wishing to learn more about ladder filters are directed to this and subsequent articles by G3JIR.

It was not easy, even in the late 70s, to obtain bulk supplies of crystals all on the same frequency. Today the supply scene has changed and crystals, all on the same nominal frequency, can be purchased for as little as \$A0.40. They come from the computer industry. The ladder filter, thus has become a very practical home-brew possibility.

Figure 14 shows a typical six-pole ladder filter and its 'tuning' capacitors. Depending on the frequency of the crystals (they should all oscillate within a range of 150 Hz for SSB filters) and the characteristics of the quartz itself, G3JIR's article shows how to calculate the value of C1 to C9 and the terminating load resistance.

Given that six crystals have been selected from a bulk supply, it may be that the capacitor sizes calculated by the Hardcastle method are non-standard. However, the writer has found that by paralleling two standard value capacitors he can always get close enough to the calculated value to produce an excellent filter. The filter board of Figure 16 has been laid out with this technique in mind.

To make the whole project even easier, it is understood that the Frankston and Mornington Peninsula Amateur Radio Club, PO Box 38, Frankston, Vic. 3199, will be making available matched sets of crystals, including matching BFO crystals and resonating capacitors.

MODULE 2 — THE CRYSTAL FILTER BOARD

Figure 15 gives the circuit diagram of the module while Figure 16 shows the parts placement on the six inch x 1.5 inch (152 mm x 38 mm) circuit board. With the exception of the diplexer (L5 and L6), the filter is used for both transmission and reception.

This diplexer ensures that the double balanced diode mixer used in the (yet to be described) mixer stage of Module 1 is properly terminated in 50 ohms at all of its output frequencies, not only at the required output of 8 MHz. This is a prime requirement of mode DBMs.

The 2N2222A buffer stage has an input impedance of close to 50 ohms and its collector load matches the crystal filter. When in the transmit mode, the input to the buffer stage is from the balanced modulator of Module 6, Figure 6 with the changeover being made with a miniature relay.

It should be noted that a mismatch occurs between the 200 ohm output impedance of the balanced modulator and the 50 ohm input impedance of the 2N2222A buffer. The consequent loss of gain is not important in this particular instance.

If, in other applications, it is necessary to provide a better match for gain reasons, then a 4:1 broadband matching transformer could be interposed between the two stages.

The filter removes one sideband and the SSB signal is amplified in a BF981 stage. This amplifier is exactly the same as that on the IF amplifier board (Module 3, Figures 12 and 13).

No values have been put on RL1/RL2 or on C1 to C9, since, as explained, they depend on the actual crystals used.

As an indication, the following values were necessary for two differently sourced batches of 8 MHz crystals used by the writer.

	Batch 1	Batch 2
RL1 = RL2	— ohms 330	180
C1 = C9	— pF 68	100
C2 = C8	— pF 56	82
C3 = C7	— pF 68	100
C4 = C5	— pF 220	470
C6	— pF 68	120
Centre Frequency	— kHz 8002	7999
3 dB bandwidth	— Hz 2682	2548
60 dB bandwidth	— Hz 4333	4210
Ripple	— dB >1	>1

In both cases the design 3 dB bandwidth was 2700 Hz and the nearest standard capacitor/resistor value was used. Trimming to the calculated values only affected the bandwidth by a few hertz, leading to the belief, that the approach is a practical one. Varying the load resistance by one standard resistor value either way had a little more effect, with top ripple increasing to just under 2 dB.

CONSTRUCTION AND TESTING

If the module is required only for reception, the relay and its associated diode can be omitted and a link put between the appropriate points on the board.

There are no constructional hazards and the technique described in Part 3 for winding the coils will be of assistance. The leads of the BF981 need to be bent down to fit into the board, the method was also detailed in Part 3.

Before applying power, two equal value resistors should be used to terminate the AGC line. As in the case of the IF strip, one goes between the AGC pin and +12 volts, the other between the AGC pin and earth. The output pins are terminated with a 51 ohm resistor, which is monitored with an RF probe and meter. Sufficient signal at 8 MHz, acquired from a signal generator or the BFO, is injected into the input pins. It might be necessary to swing this input signal and/or vary its level, until an indication is seen on the probe meter. The tuning slugs of L5, L6 and L7 are adjusted in that order for maximum meter reading, reducing the input signal as peaking proceeds to keep the meter reading on scale.

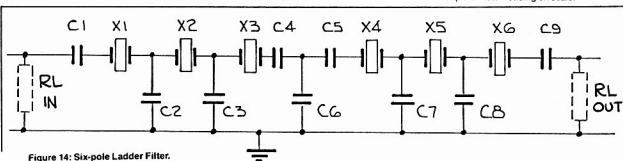


Figure 14: Six-pole Ladder Filter.

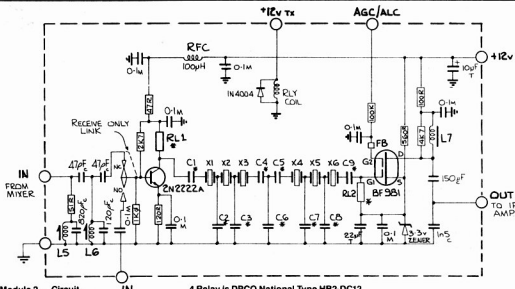


Figure 15: Module 2 — Circuit.

NOTES:

- 1 All resistors $\frac{1}{4}$ W 5 percent
2 M = Monolithic Ceramic Capacitor
3 C = Ceramic Disc or Plate Capacitor

- 4 Relay is DPCO National Type HB2-DC12

- 5 L5 = 12 turns 26 gauge Enamel Close Wound on Neosid Type A Former — F29 Slug

- 6 L6 = 25 turns 32 gauge Enamel Close Wound on Neosid Type A Former — F29 Slug

- 7 L7 = 27 turns 32 gauge Enamel Close Wound on Neosid Type A Former — F29 Slug

See text for discussion of values

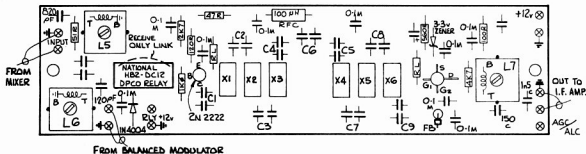


Figure 16: Module 2 — Component Layout.

It will be found that L5 is fairly broad in its tuning and the peak may be difficult to identify. Final peaking can be done only when the receiver is finished.

MODULE 9 — THE VFO

Figure 17 gives the circuit diagram of the 2.9-3.4 MHz VFO and its associated power supply. Figure 18 shows the parts placement on the two 2.5 inch x 1.8 inch (64 mm x 46 mm) PCBs used. Figure 19 is the drilling detail of the recommended Edgystone 6908P diecast box housing the units and Figure 20 shows the disposition of the boards and associated off-board components, within the box.

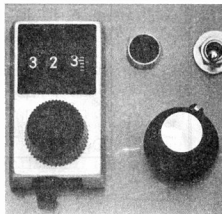
The VFO is a standard Clapp circuit but uses varactor main tuning instead of the more conventional variable capacitor. As explained in Part 1 of this series the high cost of variable capacitors and the virtual non-existence of suitable capacitor drive mechanisms has required work to produce a practical alternative.

It must be noted that if a would-be constructor already has a 220 pF swing capacitor and a suitable drive mechanism at hand, they can be used in place of the BB212 main tuning varactor diode.

In this design the goal was to produce a VFO that had a low phase noise. One of the major criticisms of current amateur commercial 'Black Boxes' is that the oscillator phase noise is high, typically around -70 dBc, which has left the receiver open to interference caused by reciprocal mixing. The VFO described in this article achieved a phase noise of -115 dBc in a 1 Hz bandwidth 3 kHz out from the carrier.

The oscillator inductor, L8, is wound on an Amidon T68/2 toroid. Its nominal inductance of 11.5 microhenries is higher than is normally suggested in order to increase the energy stored in each oscillation cycle. The frequency-determining capacitors, 100 pF, 82 pF and the two 1500 pF, are styrozeal types as their temperature characteristics are much better than ceramic discs or silver mica capacitors.

The oscillator proper is an MPF102, which is followed by a two stage FET/bipolar buffer. It is recommended that substitution of the active devices not be made. Since they are common stock items, their supply should present no difficulty.



Close-up view of the Multi-dial.

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[illegible]

The power supply for the VFO, and especially the varactor tuning voltage, must be very clean and stable. The standard three pin regulator is just not good enough. If, as in this design, a five volt change of varactor tuning voltage produces a frequency change of 500 kHz, then the 'sensitivity' is 100 kHz per volt or 0.1 Hz per microvolt. A 7808 regulator has a typical noise output of up to 90 microvolts and, if used in place of the regulator described, would produce an output that was effectively FM'd by 9 Hz. The 723 regulator used in the configuration shown, has a noise output of only two microvolts and does not significantly modulate the carrier.

The 12 volt supply to the 723 is already regulated, which removes some of the strain on it. The 1k5 and 12k resistors between pins 3, 4 and ground set the output to 8.0 volts. The 1k2 resistor between pins 5 and 6 ensures maximum temperature compensation. The 10 ohm resistor out of pins 2 and 10, limits the short circuit current to about 70 milliamperes. The eight volt line powers the oscillator, and buffers. It is also the source of the tuning voltage for the two varactors.

The Spectrol Type 534 10-turn 10k linear potentiometer and its Spectrol Model 18-11 Multidial, forms the main tuning function, while a linear 10k potentiometer provides for receiver incremental tuning or RIT.

SW1 allows the RIT to be switched on and off, with a LED to indicate status. The relay is energised only on transmit and disables the RIT irrespective of the position of SW1. This avoids the situation where stations chase each other up and down the band because their 'clarifiers' have been disabled on transmit.

One thing that is rarely stressed, or for that matter mentioned, is that even the best designed and constructed VFOs will not reach their potential for stability and cleanliness, unless they are housed in the right sort of container. Ideally this container should be of metal and have sufficient thermal capacity to iron out short term variations in ambient temperature. It should also be very stiff and non-resonant; ie the sides should not flex when the box is moved about. Such flexure will cause a slight variation in the oscillator frequency.

Luckily all these desirable features are present in the ubiquitous die-cast box. The present design uses an Eddystone Type 6908P unit. Finally, don't expect the box to do all that it should if the lid is left off. Apart from draughts causing frequency changes there can be more subtle effects. During the development of the VFO module it was found that the 50 Hz field from the equipment on the bench was of sufficient magnitude to cause severe FMing of the oscillator and, even worse, degraded the phase noise performance.

CONSTRUCTION AND TESTING

Board construction is not difficult but it is essential that all components be firmly pulled down to the board. L8 is secured to the board with a 0.75 inch x 0.5 inch (19 mm x 13 mm) piece of stiff insulating material and a NYLON nut and bolt. A suitable insulant is epoxy circuit board material with the copper removed from it. If available, the turns on L8 can be backed in place with a high quality 'Q' dope. Don't use nail varnish because it noticeably reduces the Q of the coil.

Commission the regulator board first and before installing it in the die-cast box, temporarily connect in the two tuning potentiometers. When 12 volts is applied, the voltage at the output pin should be 8.0 volts with a possible variation of 0.2 volts. When the RIT potentiometer is swung through its full 270 degree travel, the voltage on the slider should vary between about 0.5 and 7.5 with respect to earth.

Similarly, the slider of the 10-turn potentiometer should vary between 1.5 and 6.5 volts as the potentiometer is wound from one end to the other. If not, adjust RV1 and/or RV2 to get close to these values.

Still on the bench, connect up the VFO and apply power. Turn the RIT potentiometer to half travel and measure the VFO frequency at both ends of the travel of the 10 turn potentiometer. This is ideally done using a digital frequency meter, but, failing this, listening on a general coverage receiver will do the job. Adjust RV1 and RV2 again so that the frequency coverage is from just under 2.9 MHz to just over 3.4 MHz.

With the main tuning potentiometer at some central point, move the RIT potentiometer to one end of its travel and measure the frequency, then to the other end of its travel and again measure the frequency, the total change should be about 3 kHz. If the VFO output pins are temporarily terminated with a 50 ohm resistor, the output when measured with the RF

probe as used in Part 2, should be between 0.5 and 0.6 volts.

If the die-cast box has been drilled according to Figure 19, then assembly of the two boards and the other components into it can take place. The writer recommends that the box is rubbed down with steel wool and painted before this assembly takes place. The extra time spent doing this makes the finished project look more professional.

Each of the two boards is mounted on quarter-inch (6 mm) metal standoffs tapped an eighth-inch (3 mm) or whatever else is around the shack that is about this size. The connection between the output pins on the VFO board and the output socket should be done in thin, about eighth-inch (3 mm) coaxial cable, the impedance being unimportant. All other connections are made in normal hook up wire.

Next month's article in *Amateur Radio* will cover Module 7, the heterodyne board and Module 1, the front end board.

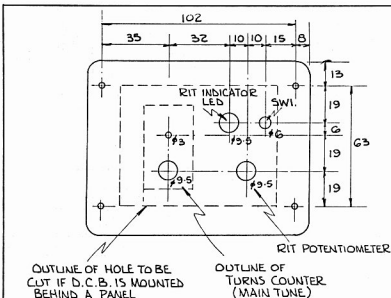


Figure 19: Drilling Detail for Base of 6908P VFO Diecast Box.

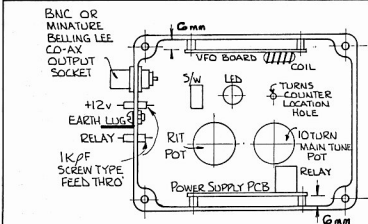


Figure 20: VFO/Power Supply. Placement of components and PCBs in 6908P DCB.

AERIALS: SOME PRACTICAL CONSIDERATIONS — II

SELF-SUPPORTING MASTS AND TOWERS

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SO FAR WE have considered guyed masts, but what of the self-supporting types of masts and towers? They certainly look more professional and there are no problems caused by guy wires when you come to hang that ultimate beam system on top of the structure. They may take a number of forms, from the telegraph pole through to the lattice tower, and each does the job efficiently if proper attention is paid to the mechanics of it and correct design safety factors are considered.

In considering the guyed mast, all loads except the downward acting load due to the mast's own weight and some small load due to the downward acting component of the guy wire tension, are carried by the mast base. All wind and aerial loads are taken by the guy wires and their anchors. It is a completely different ball-game when a self-supporting structure is used.

Consider a mast standing upright and just balanced on the ground. At the first puff of wind the mast would fall down in the direction the wind blows it. From this fact we can deduce several important things. Firstly, the wind exerts a force on the mast; secondly, that the mast has resistance to the wind; a wind-loading. If we further consider the position, we find that the harder the wind blows, the quicker our mast falls down. We can further deduce that the wind-loading increases with wind speed. Furthermore, the larger the area offered to a given wind the greater the tendency for our mast to fall down.

WIND LOADING

We now have two factors tending to overturn our mast: firstly the wind velocity, the other the mast area. The wind velocity exerts a pressure on the mast area which increases as the square of the velocity. At a velocity of 50 MPH, the wind exerts a pressure of 6.4 pounds per square foot, but if the velocity is doubled to 100 MPH, the pressure is quadrupled to 25.6 pounds per square foot. If we are designing our own structure we begin by determining the wind velocity we wish to consider a safe maximum. This figure must be reached by considering the known wind patterns over a considerable time for the region where the mast will be erected, taking into consideration any local wind peculiarities.

We therefore calculate the area of the mast, and knowing the wind pressure per unit area at our designed maximum wind velocity, we can determine our total overturning force. Where a circular pipe or rod section is used there is less wind resistance due to its more streamlined shape, so a correction factor may be applied to the area calculations. If the area of a circular section is multiplied by the factor of .6, this will compensate for the circular shape. With beam aerials, the area should be calculated, as should the area of the rotator and the rotator extension pipe. The wind load of the mast will act from half the height of the mast. The aerial wind load will act from its height and the combined load for the extension and the rotator will act from halfway up the extension pipe. Thus, if we have a mast area of X square feet multiplied by .6, it will be acting as a lever from

the midpoint of the mast and will exert a force of $(X \times .6)$ pounds $\times H/2$ feet pounds, where X = area of mast in square feet and H = height of the mast in feet. Similarly, the force acting from the rotator/extension will be $X_{rot} \times H + H_{rot}$, where X_{rot} = area of rotator + area of extension and H_{rot} = height of rotator plus height of extension/2.

Forces acting due to the aerial can be found by estimating the aerial area (square root of (side area squared + end area squared)) $\times H_a$, where H_a = height of aerial above ground. Obviously these figures do not leave any margin for safety, so it is usual to multiply these figures by a factor known as the safety factor. The usual safety factor used varies between two and three. If the mast or tower is ready-made, all the necessary calculations of stress and wind loading have already been made by the manufacturer and it only remains to check that they are adequate for local wind conditions.

OVERCOMING WIND LOADING

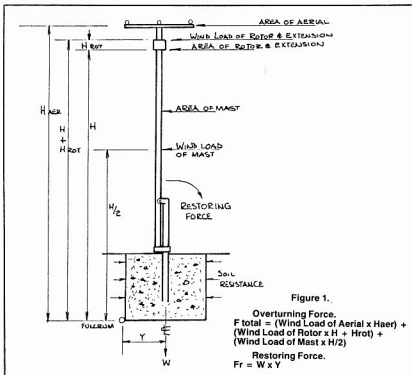
As we are not guying our mast, it then becomes necessary to find a method of preventing the wind loading from overturning it. At its very simplest, as with our telegraph pole, this overturning force can be resisted by burying some of the mast in the ground and

allowing the soil resistance to offer the necessary resistance to the overturning force. But, how deeply do we bury the mast?

In theory this will vary considerably with the nature of the soil in which the mast is erected but a good rule of thumb, used for generations by electric authorities, is to plant the mast for some six feet for a mast up to 30 feet high and one-sixth of its height if above 30 feet high. Thus, if we want a mast 42 feet high we must begin with a pole 50.4 feet long and bury 8.4 feet in the ground. The same rule applies for concrete light poles. These concrete poles make an attractive looking structure but are expensive and quite heavy. A 17 metre pole weighs some three to three and a half tonnes and would be about 14 metres out of the ground. This would present more than a small problem for a working bee from the club and would be best left to professional erectors, as would the erection of a wooden pole of similar size. It may be possible to do a deal and obtain a second grade concrete pole cheaper and have your electricity authority plant it in your backyard for a nominal cost.

ANOTHER APPROACH TO OVERCOMING WIND LOADING

A different approach can be made, namely, the bottom of the mast, or more realistically, a



supporting post of wood or metal, can be buried in a concrete block. When the mast is raised the position is similar to novelty toys which have a counterweight in the base and they always right themselves when tipped over. (Not that we intend going that far with our mast!!)

Acting on this concrete block, or counterweight, we have forces shown in Figure 1. As an overturning force, we have the wind loading of the mast acting as a lever from halfway up the mast plus the wind load of the aerial and rotator, if used, acting as a lever from halfway up the rotator/mast extension and including the wind load of the beam. Opposing this is the deadweight of the concrete block plus the weight of the mast, rotator and aerial acting vertically through the concrete block. The overturning force acts on a pivot or fulcrum formed by the edge of the counterweight opposite the direction of the wind at any given time. The counterweight acts about the same fulcrum to restore equilibrium or maintain stability in the system and, so long as this force exceeds the overturning force, the mast will remain erect.

Do not overlook that the wind forces will also supply a bending moment to the mast and can actually bend it if construction is too light or flimsy. Therefore, we need good old-fashioned solid construction practices.

Instead of a mast construction, a triangular or square lattice type of tower can be used of course.

ERECTING THE MAST

The mast can be stood up and tilted to posts as described for the guyed mast. However, there is one big difference in the approach to the job. As this is to a self-supporting structure, there are no guys to assist with the erection. It then becomes necessary to make up temporary ropes or wire guys and take them off where convenient during the actual erection. One convenient difference is the need to get to the top of the mast after erection, so it is simple to remove the temporary guys when the mast is erect. If the mast is bolted in place it then becomes a fixture and, consequently, it is almost imperative to fit pole steps to make it possible to climb to the top to carry out adjustments, etc.

Allowing for the well-known propensities of the younger generation to act adventurously, it is wise to begin the steps at least two and a half metres from the ground. This will then necessitate the use of a ladder to climb to the first step. Treat it safely and do not lead the ladder for the littles to find and use.

At the top of the mast it is suggested to place four steps at the same level with 90 degrees spacing and two steps opposite at the next level down. It is sometimes necessary to have two people at the masthead when fitting a beam to the top and it is not comfortable wearing a 15 stone pair of boots on top of your own at that height!

For comfortable climbing, treat the steps as you would the rungs of a ladder. That means, one foot per step up or each step two feet apart on each side. Once again, I emphasise the safety angle — wear hard hats and safety belts when working on or around the mast.

A lattice tower can be installed to be a rigid fixture and it will take very little thought to find a means of securing the base. For instance, a heavy base plate on the tower, a couple of heavy hinges, and a bolt inserted into the concrete base which is safely secured with a nut when the mast is erect.

TILTING AND TELESCOPING TOWERS AND MASTS

For sheer luxury and convenience it is hard to go past the tilting and telescoping tower. With a lesser luxury, the telescopic tower. For these

towers comes some control over the forces of Mother Nature as the tower may be telescoped to a lower level when prevailing winds become menacing. In the final chapter, you can tilt the mast and support it horizontally if necessary. In cyclonic conditions don't wait for the full fury of the winds before doing this. It is almost imperative that a tilting tower or mast be telescopic also to reduce the tilting load to manageable proportions, particularly when operating the tower alone. Remember that the stress situation has altered quite a bit from the upright condition when the mast is horizontal.

The short section of mast normally below the tilting pivot is now opposing the main load caused by the upper section of the mast whilst horizontal. This applies a force of weight on the upper section acting from halfway along the mast plus the weight of the rotator and the extension acting from halfway along the extension plus the weight of the aerial acting from the distance of the pivot point to the aerial. These combined forces are all acting on the tilting winch and are quite substantial. Consequently, ensure that the winch, winch cable and mounting system are heavy enough for the job at hand, are substantially mounted, and that the winch and cable are correctly aligned.

It is best to follow the manufacturers instructions when erecting these towers. Failure to do so would render void any claim for faulty materials or workmanship against the suppliers. These suggestions are for guidance only and I do not accept any responsibility for accidents arising from same.

The amateur who has sufficient engineering knowledge to design and build their own lattice tower and base system would not need my advice on how to erect it.

WINCHES AND SAFETY MEASURES

Winches have several flaws in their design and are likely to confound the poor old amateur with their completely unpredictable behaviour at the most inopportune times. Therefore, it is suggested to take suitable restraining

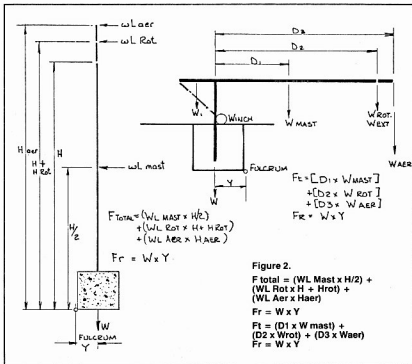
measures with a winch to prevent any minor (or major) disasters occurring.

Winches carry the lifting and tilting loads of the mast/tower and aerial through the winch cables. For this reason it is necessary to choose a cable that is capable of carrying the load with a good safety factor and ensure that the cables are periodically inspected and lubricated. Quite obviously the winch and its mounting are also carrying this load, so the same safety factors should apply to both winch and mounting. The action of the winch pawl should be positive and the pawl system should be greased and a close check made of the pawl spring for rust and corrosion.

A broken or worn pawl on the tilting winch can cause the sudden descent of the mast and, if you are standing in the wrong place, you could be driven into the ground like a staple! The same result could be reached if unauthorised people, particularly children, attempt to operate the winch. Therefore, take the strain off the winch and cables by building-in a locking pin and plate system for both winch systems. Knowing the ability of the junior population to figure out the easiest way to get into the maximum amount of mischief, I suggest that these safety locking pins or plates be, in turn, locked securely with padlocks, keeping the key in the shack and not left hanging on the winch. The extra peace of mind you will find will enable you to concentrate on enjoying QSOs to the fullest.

EFFEL TOWER AND OTHER AWFUL TOWERS

These classic types of towers, which have three or four upright legs and usually are of beautiful aesthetic proportions, are the ultimate in the art of tower design. If you can afford to have one installed at your QTH you are indeed fortunate and sufficiently "well-heeled" to have the constructors do all the worrying and calculations involved with laying the foundation concrete blocks, etc.



Windmill towers are in this category and make fine towers for all our purposes. The type of tower also has the same basic design problems as any other self-supporting tower. Wind loads have to be calculated from the area and maximum wind velocity. From these figures, the overturning forces have to be determined, as before. However, the righting force calculations are complicated by the fact that there is one concrete block at the base of each leg.

We will not go into the necessary calculations here as few will be built and the erection firm will take care of the details for those installing one.

CONCRETE SLABS AND BASES

If we study the diagram of the mast with its forces acting upon it, we see that the fulcrum for both overturning and righting forces is located on one edge of the concrete block. Some simple mental arithmetic will show that a deep block of a very small area will be overturned more easily than a shallow block of a wide area. If, however, the block is too shallow it does not supply a great deal of support to the base posts. It is then necessary to consider the shape of the block and a good round style is a cube or maybe a somewhat greater plan area than elevation area. As all stresses and forces are designed around the worst possible case to give ample safety margin, it can be easily seen that it is best to place the mast support in the centre of the block.

The weight necessary to overcome the overturning force at the designed wind velocity must be determined and a safety factor of at least two applied to the result; ie the weight doubled. Knowing that one cubic foot of concrete weighs approximately 140 pounds, or one cubic yard weighs some 3780 pounds, or even one cubic metre weighs some 2235 kg, we can then estimate the amount of concrete needed.

The necessary size of the hole to be excavated can also be calculated.

If you are lucky you may receive assistance from family and/or friends to dig the hole while you are "planning the next step!"

Once the hole is there in all its glory, you may decide to make further use of your willing(?) assistants and decide to mix your own concrete. A suitable mix is one part cement, two parts sand, and four parts gravel. It is certainly easier on the labour side to buy the cement ready mixed.

Before the cement is poured install the base posts and hold them plumb with temporary staying timbers or wires until the concrete has set. Heavy steel reinforcing rods can be driven into the sides of the hole to transfer some of the load into the earth and so increase the safety factor. It is also a sign of good practice to build a simple box form at the top of the hole to carry some of the concrete above the ground level. Do not think the concrete is wasted as its weight will still contribute to the righting force, and make a more professional-looking job.

If the mast is to be mounted on a foot plate bolted to the concrete base, a wooden frame can be made using the foot plate as a template, with the mounting bolts fitted to the frame and the frame and bolts supported in the centre of the hole until the concrete sets. The bolts should present a large area to the concrete to prevent pulling-out under strain. This can be done by slipping a length of heavy steel (say 2 x 1/2 inch), drilled at the appropriate centres, over the bolts. Another method is to use heavy lag bolts or to thread lengths of steel rod and bend them at right angles well below surface level.

When the concrete has set it is only necessary to remove the nuts, wooden frame and box frame above ground level. Do not forget to allow at least a week for the concrete to cure before raising the mast.



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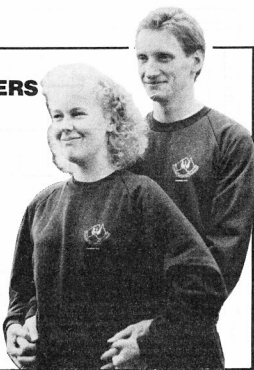
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USSR CALL SIGNS

Jack Wichels W7YF

Secretary, West Washington DX Club

710 Alder Street, Edmonds, Washington, 98020, USA

Many are intrigued by Russia but few know or understand very much about it. Ken Stevens VK5QW, was fortunate enough to attend the North West Pacific DX Convention, in Seattle, Washington at the end of July 1986. Included in the many interesting subjects covered by the Convention was a lecture on Russia, Russian call signs and the way they work, and a coverage of their awards program by Jack Wichels W7YF. Jack has kindly given permission for AR to publish his lecture notes so AR readers may better understand the USSR.

USSR GENERAL INFORMATION¹

- 1 The land area of the USSR is about two and a half times that of the USA.
- 2 The USSR makes up about one sixth of the total land area of the world.
- 3 The population of the USSR is about 15 percent greater than that of the USA.
- 4 The USSR ranges in latitude (excluding the Arctic Islands) from about 35 degrees north in the Turkmen Republic, to about 1300 km from the North Pole at Cape Chelyuskin.
- 5 The USSR contains more different time zones — 11 — than any other country in the world, from Zone 3 in Kaliningrad (UA2F) to Zone 13 in Chukotka (UAOK). The entire USSR is on Daylight Savings Time for the whole year round.
- 6 Parts of the USSR still have extremely low population density. Evenk Nationality Okrug UAOKH, in Central Siberia, only has an estimated 13 000 population: 44 people per 1000 square miles. By comparison, Alaska had, in 1984, 880 people per 1000 square miles.
- 7 Excluding Mexico and Canada, the USSR is the closest country to the USA: 80 km across the Bering Straits, in the middle of which is Big Diomedes Island (USSR), separated from Little Diomedes Island (USA) by the International Date Line and only three kilometres of water.

REPUBLICS OF THE USSR

The various USSR Republics shall be listed first since the USSR call sign system is based on keying the call signs to each of the various Republics.

The USSR — Union of Soviet Socialist Republics — is made up of 15 separate Republics.

- a The RSFSR — Russian Soviet Federated Socialist Republic — is by far the largest of the 15 Republics, comprising 76 percent of the USSR's land area and 54 percent of the USSR's population. The RSFSR might very loosely be described as made up of what may be called "Old Russia" in Europe and "Siberia" in Asia.

- b The remaining 14 Republics are these:

- 1 B-TY Ukraine Soviet Socialist Republic, or the Ukraine
- 2 C Belyorussian SSR, or Belyorussia, or White Russia
- 3 D Azerbaijan SSR, or Azerbaijan
- 4 F Georgian SSR, or Georgia
- 5 G Armenian SSR, or Armenia
- 6 H Turkmen SSR, or Turkmen
- 7 I Uzbek SSR, or Uzbek
- 8 J Tadzhik SSR, or Tadzhik
- 9 L Kazakh SSR, or Kazakh
- 10 M Kirghiz SSR, or Kirghiz
- 11 O Moldavian SSR, or Moldavia

- 12 P Lithuanian SSR, or Lithuania
- 13 Q Latvian SSR, or Latvia
- 14 R Estonian SSR, or Estonia

The meaning of the capital letters is explained below.

DXCC COUNTRIES AND CONTINENTAL BOUNDARIES

Each of these 15 USSR Republics counts as a separate DXCC country. The DXCC Countries List shows 19 USSR "countries." Where are the other four?

- a The RSFSR, though a single Republic, is on two continents, Europe and Asia. So the European RSFSR counts as one country and the Asiatic RSFSR counts as the second, and separate, country. We are now up to 16, instead merely 15, countries.
- b Kaliningrad, UA2F (before World War II it was Königsberg, East Prussia, Germany), is politically part of the RSFSR, but is separated (by more than 120 km) geographically by two other USSR Republics, Lithuania and White Russia. So UA2F-land is still another separate DXCC country. Now there are 17 of them!
- c Franz Josef Land, a group of USSR-owned islands in the Arctic Ocean, is more than 360 km from the USSR mainland, so FJL counts as a separate country. . . . 18 countries.
- d USSR stations (4K1) operating from scientific bases on the Antarctic Continent are counted as operating from Antarctica. There are the 19 USSR DXCC "countries."

(Note: Look at a map showing the Azerbaijan Republic. Part of this Republic — Nakhichevan ASSR, Oblast number 002, is — like Kaliningrad, geographically isolated from its parent Azerbaijan SSR by Armenia.

Oblast number 002, however, is not counted as a separate DXCC country, because the separation distance is less than 120 km (DXCC Criteria number 3).)

We may also point out that the USSR political boundary between European RSFSR and Asiatic RSFSR differ from the traditionally accepted geographical boundary between the two continents. The accepted geographical European-Asiatic continental boundary starts at the Arctic Ocean, follows the ridge line of the Ural Mountains, then the Ural River to the Caspian Sea. Politically as well as by call sign area, the USSR defines this continental boundary as being the same as the western boundaries of the UA9 call sign area, which are west of the Urals. So for DXCC as well as for All-Asian DX Contest, any UA9 call sign is on the Asian continent, by definition.

Note, also, that the USSR Republics of Georgia, Azerbaijan, and Armenia are also on the continent of Asia. There can be no argument here, since the Caucasus mountains, which form the northern border of these three Republics, are also the accepted geographical boundary between Europe and Asia.

THERE ARE OBSTALS, AND THEN THERE ARE OBSTALS!

There are 164 different amateur radio regions in the USSR. Each of these, for amateur radio purposes, is called an oblast. These have been assigned discrete numbers, from 001 to 191, as of May 1, 1984, when the current USSR call sign assignment system became effective. There are, no longer, any oblasts with numbers 11, 32, 35, 61, 116, 171 and 172: for various reasons, these seven oblasts were deleted on or before May 1984.

There is a difference between an oblast for amateur radio purposes, and an oblast as used to

define a Soviet political sub-organisation. If one looks at a map of the USSR for these oblast QTHs, it will be found that these amateur radio oblasts include not only Soviet (political) oblasts, but also USSR Republics (Moldavia, OBL No 39); Autonomous SSRs, or ASSRs (Tatar ASSR, UA4F; No 94); Krays (Primorye, UA0L, No 107); Autonomous Oblasts, or AOs (Jewish, UA0D, No 111); Nationality Oblasts, or NOs (Koryak, UA0X, No 129); and even merely cities (Moscow, UA3A, No 170). Again, for amateur radio purposes, all of these "things" are called oblasts.

There is good reason to mention the "oblasts versus oblasts" here. For example, if you QSO an amateur whose prefix is UA0X, he may tell you his QTH is in Kamchatka — or he may tell you his QTH is in Koryak. Either way, he is correct. The Koryak NO is a political subdivision of the Kamchatka Oblast. If you really pin him down he will tell you he is in OBL No 129.

When you look at an Oblast List set up in numerical order, you might well wonder how did they get in that particular order. The original list of 170 oblasts were set up in order by the name of the Republic in the Cyrillic, or Russian, alphabet, and then numbered sequentially.

INTERNATIONALLY ASSIGNED RADIO

CALL SIGNS FOR THE USSR

International radio call sign blocks are assigned to each world country (and a few International Organisations) by the International Telecommunications Union (ITU), whose headquarters are in Geneva, Switzerland. A reasonably complete and current list of ITU call sign assignment blocks is included on page 125 of the 1986-87 Australian Radio Amateur Call Book.

The ITU call sign block assignments for the USSR are listed below:

EKA-EKZ

EMA-EOZ

ERA-ESZ

EUA-EZZ

LVA-LYZ

RAA-RAA — or any call sign starting with the letter R

UYA-UZZ — or any call sign starting with the letter U

YLA-YLZ

4JA-4LZ

Gaps in the E-series are for call sign blocks assigned to other countries, such as Liberia, Eire, Spain, etc. Likewise, other world countries are assigned blocks beginning with L, Y, and 4.

4K0 — prefixes have been used for stations on floating ice islands in the Arctic Ocean. 4K1 — prefixes are used by USSR stations operating from Antarctica. YL3M was on air from Yaroslavl, OBL No 160, a few years ago. Several years ago, 4J0BJ was assigned to a special DXpedition on Shikhan Island, in the Kurils.

The USSR has also been a little unusual in occasionally assigning call signs made up of only four letters (no numerals) to amateur stations. RAEM was the call sign assigned to Ernst Krenkel from 1934 until his death in 1971;

UPOL has been the call sign given to Arctic ice island amateur stations, sometimes followed by a number; ie UPOL-22.

To amateurs just beginning to get their feet wet in DX, the message is clear: learn how to use that ITU list in the Call Book. It can answer a lot of questions arising when you hear an unusual call sign.

Warning! Caution! Here comes an in-house, purely arbitrary, "take it or leave it!" W7YF definition for the rest of the article to simplify

Leningrad UA1A
#169

NOTE: Traditional geographical boundary between Europe and Asia (dotted line at right) is not the U.S.S.R. political boundary between Europe and Asia.

Moscow
UA3A
#170

UA2F-#125

500 miles

NOTE: Prefix for R.S.F.S.R. can also be "UN-", "UV-", "UW-" or (for club stations) "UZ-".

Russian Soviet Federated Socialist Republic (RSFSR). (European Part Only. Arctic Islands Not Shown).

W7YF 8/18/84

URAL MTS.

UA6Y
#102

UA1Z
#143

UA1P
#114

UA1N
#88

UA1O
#113

UA1Q
#120

UA4N
#131

UA4W
#95

UA3M
#132

UA3U
#123

UA3V
#110

UA3S
#151

UA3R
#157

UA4U-#92

UA4A
#156

UA6L
#150

UA6U
#115

UA6I
#89

UA6H
#108

UA6E
#109

UA6J
#93

UA6K
#87

UA6P
#96

UA6W
#86

UA4C
#152

UA4F
#148

UA4S
#91

UA4P
#94

UA4L
#164

UA4H
#133

UA3P
#160

UA3E
#147

UA3W
#135

UA3Y
#118

UA3L
#155

UA3X
#127

UA3D
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UA3I
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describing the new USSR call sign assignment system, which went into effect on May 1, 1984.

- 1 "Russian" oblasts will mean any oblasts within the RSFSR only.
- 2 "Other" oblasts will mean any USSR oblasts not within the RSFSR.

IF YOU HEAR A USSR AMATEUR SIGNING HIS CALL, WHERE IS HE LOCATED?

Note: You will note this first description seems to ignore USSR call signs beginning with E, L, Y, and 4. This is correct. They will be discussed later under "Special Call Signs."

If you hear the call sign beginning with R or U, listen to see what the second letter of the call sign is.

- 1 If the second letter is A, N, V, W, or Z, his QTH is in a Russian (see definition above) oblast.
- 2 If the second letter is any other letter, he is in one of the other USSR oblasts (again, see definition above).

IF A RUSSIAN OBLAST, listen for the call sign number and the first letter to the right, or immediately following, the number. This key will tell what oblast his QTH is in, by using the Oblast List (see below).

IF IN ONE OF THE OTHER OBLASTS, listen for the two letters immediately before and after the call sign number. Disregard the call sign number itself. These two letters will identify the QTH of this other oblast from the Oblast List.

Refer back to the list of the 14 "other" Republics above for moment. You will see some upper-case, or capital, letters preceding the name of each of the "other" Republics. One of these letters will be the second letter of the call sign — the letter

immediately before the call sign number — and this letter identifies which of the "other" Republics the amateur is located in. The Ukraine is assigned more than one letter, since there are more than 26 separate oblasts making up the Ukraine.

You will also notice when you look over the Oblast List or the Oblast Maps, that there are five of the 15 USSR Republics which do not have any political subdivisions — that is, the whole Republic is a single oblast.

SECOND LETTER

G
O
P
Q
R

REPUBLIC

Armenia
Moldavia
Lithuania
Latvia
Estonia

For each part of these five Republics cited above, you can forget about any other part of the call sign to identify the oblast, since there is but one oblast in each.

Examples

1. UA4HP

The second letter is A, meaning it is a Russian oblast (RSFSR). The number and first letter to the right is 4H. From the Oblast List, this is Kuibishev, OBL No 133.

2. RWOKA

The second letter is W, again telling you it is a Russian oblast. The number and next letter is OK. From the Oblast List, this is Chukotka, OBL No 139.

3. UL8GA

The second letter is not one of the Russian oblast letters, so it is in one of the other Republics. The second letter is L; disregard the number; the next letter is G. So the identifying sequence is LG. On the Oblast List, this is shown as OBL No

190, the city of Alma Ata, in Kazakh.

And that is all there is to QTH identification of call signs under the new USSR call sign system. It is even simple and logical.

CLUB CALL SIGNS

In the USSR, in addition to call signs issued to individuals as in the US, there are special uniquely-identified call signs issued to club stations. Club station call signs in the USSR are identified in two different ways, depending on whether the QTH is in the RSFSR or in one of the other Republics.

- 1 IN RUSSIAN OBLASTS, club call signs are identified by the second letter of the call sign, which will always be Z.

Example: UZ0KAA, a club station in Chukotka, OBL No 139.

- 2 IN OTHER OBLASTS, club call signs are identified by the second letter to the right, or second letter immediately following, the call sign number. This letter will always be either W, X, Y or Z for club stations.

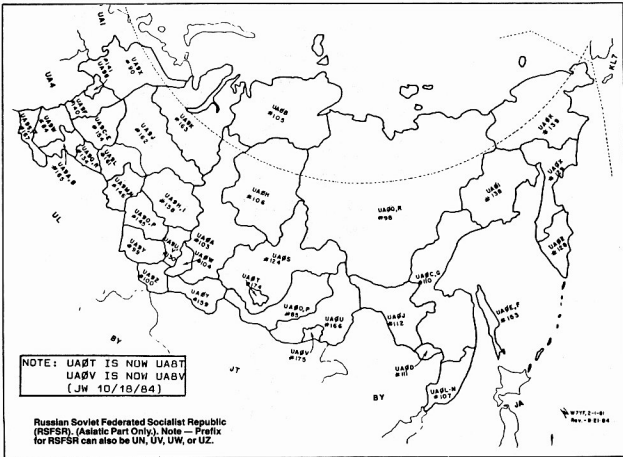
Examples: UD2DWA, a club station in Azerbaijan, OBL No 001.

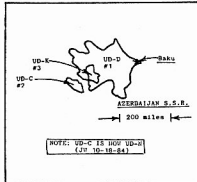
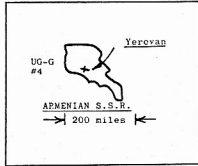
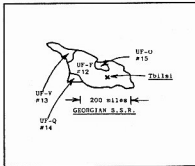
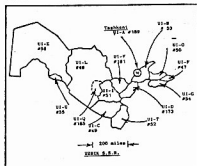
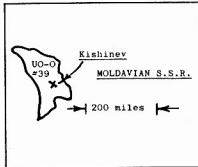
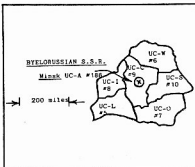
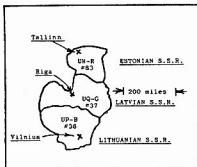
RC1CZB, a club station in Minsk, OBL No 009. The club identifying letters cannot be in the same (second letter of the call sign) location as for Russian oblasts, because this location is reserved for the Republic's ID letter.

Exceptions:

Unfortunately, there are exceptions to this otherwise logical "call sign versus QTH" system.

- 1 "Grandfathered" Call Signs. Five letter call signs which were issued prior to 1971 and





seems to have no inhibitions for frequently assigning special call signs. Fortunately, many such times these special calls seem to more or less fit the system just described.

For example, U0Y has been used for DXpeditions to Tuva ASSR (Zone 23) — while there is no second-letter to identify this as a Russian oblast, the 0Y does fit OBL No 159, Tuva. A couple of years ago, U1ZM and U1ZZ were on air from Murmansk and vicinity — here again, still no second-letter, but otherwise the 1Z was okay for OBL No 143, Murmansk. U4W was on air some time ago from Udmurt, OBL No 095, and it fits the same pattern — no second-letter, but the 4W fits the system.

On the other hand, some special calls do not give much of a clue. U2H was on from Khatyn War Memorial in late 1984. His QSL information indicates Minsk, OBL No 009. I have not been able to pinpoint Khatyn.

The 1984 USSR call sign system appeared, at first, to "go to the dogs" during the Soviet Union's 40th Anniversary of World War II Victory," during which time special call signs came out of the woodwork from all parts of the USSR between January 1 — May 12, 1985. Even here, however, these "Victory" call signs could be tied back into the general call sign

assignment system, once one figured out how to do it.

OBLAST LIST

The call sign prefixes on this list are shown beginning with the letter U, but keep in mind they can also begin with the letter R — and in some limited cases, E, L, Y or 4.

USSR OBLAST MAPS

These maps identify and locate the various 184 oblasts on maps of each USSR Republic. Notice the dotted borders on maps for Tadzhik, Kirghiz and Uzbek SSR: Oblasts Nos 183, 184 and 185 are newly created oblasts, and their boundaries were not shown on my map: so I had to make a guess at these particular oblast boundaries, thus the dotted line boundaries.

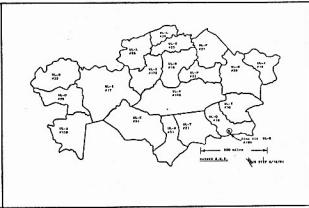
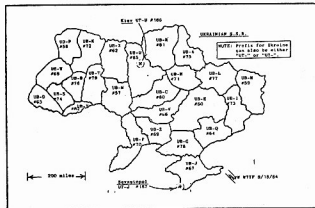
MINOR OBLAST CHANGES ON MAPS

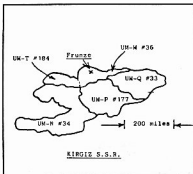
Since first preparing these maps, three oblast identifiers have been changed since May 1, 1984. These changes are noted in small boxes on the appropriate oblast maps.

- 1 UD-C, OBL NO 002, has changed to UD-N
- 2 UA0T, OBL No 174, has changed to UA8T
- 3 UA0V, OBL No 175, has changed to UA8V

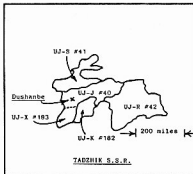
which are still in use are not necessarily changed by this new call sign system.

2 **Commemorative, or Special Event Call Signs.** Some of these special call signs fit into the calls beginning with E, L, Y, or 4, as mentioned previously. The Soviet Union

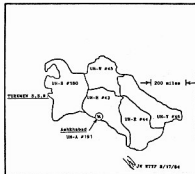




KIRGIZ S.S.R.



TADZHIK S.S.R.



28 SEP 8/77/84

THE SOVIETS DO CHANGE NAMES OF CITIES

The Soviets do like to change names of cities or towns every so often, to supposedly honour a recently-deceased leader or high official. This may cause a problem sometimes when a USSR amateur tells you his QTH, and it cannot be located on a map — because the name change only took place in the last year or so! Here are a few "old" and "new" names that have taken place over the past several years:

- 1 Rybinsk, in UA3M, is now Andropov
- 2 Izhevsk, in UA4W, is now Ustinov
- 3 Sharypovo, in UA0A, is now Chernenko

ENGLISH-RUSSIAN MORSE CODE ALPHABET EQUIVALENTS

Table one shows these equivalents. The Russian, or Slavic, alphabet — more correctly known as the Cyrillic alphabet — has five more letters than does the English alphabet. I don't rightly know what the average amateur would do with this chart if he

ENGLISH, RUSSIAN & MORSE ALPHABETS

A	А	•••	L	Л	•••••	W	В	•••••
B	Б	•••••	M	М	•••••	X	Х	•••••
C	С	•••	N	Н	•••	Y	Й	•••••
D	Д	•••••	O	О	•••••	Z	З	•••••
E	Е	•••	P	П	•••••		Ш	•••••
F	Ф	•••••	Q	Ц	•••••		Э	•••••
G	Г	•••••	R	Р	•••••		Ю	•••••
H	Х	•••••	S	С	•••		Я	•••••
I	И	••	T	Т	•••		Ч	•••••
J	Й	•••••	U	У	•••			
K	К	•••••	V	Х	•••••			

Table 1.

USSR OBLAST LIST

1	UD-D	Astrakhan	50	UI-O	Namangan	99	UA9Y	Altai	148	UA4F	Penzenskaya
2	UD-N	Nakhichevan	51	UI-I	Samarokandskaya	100	UA9Z	Gorno-Altai Aut	149	UA1W	Pskovskaya
3	UD-K	Gorno-Karabakh	52	UI-T	Surkham Dantiskaya	101	UA6A	Krasnodar	150	UA1L	Rostovskaya
4	UG-G	Armenian	53	UI-B	Tashkentskaya	102	UA6Y	Adige Aut	151	UA3S	Riazanskaya
5	UG-L	Brestskaya	54	UI-G	Ferganskaya	103	UA0A	Krasnoyarsk	152	UA4C	Saratovskaya
6	UG-W	Vietskaya	55	UI-U	Khoremskaya	104	UA0W	Khakass Aut	153	UA6F	Sverdlovskaya
7	UC-O	Gomelskaya	56	UI-Z	Kara-kalpak	105	UA0B	Tajmyrskiy	154	UA0C	Smolenskaya
8	UC-I	Grodenskaya	57	UB-N	Vinnitskaya	106	UA0H	Altaymyrskiy	155	UA3L	Volgogradskaya
9	UC-C	Minskaya	58	UB-P	Volinskaya	107	UA6L	Primorye	156	UA4A	Tambovskaya
10	UC-S	Mogilevskaya	59	UB-M	Voroshilovgradskaya	108	UA6H	Stavropol	157	UA3R	Tambovskaya
11	UC-Z	Deleted 1960	60	UB-E	Omelopetrovskaya	109	UA6H	Karachai-Cherkess	158	UA6H	Tomskskaya
12	UC-F	Georgia	61	UB-S	Deleted 1963	110	UA0C	Khabarovsk	159	UA3V	Tuva
13	UC-V	Abkhazian	62	UB-U	Zhitomirskaya	111	UA00	Jewish	160	UA3P	Tulskaya
14	UC-Q	Adjar	63	UB-D	Zakarpatskaya	112	UA0J	Amurskaya	161	UA6L	Tumen'skaya
15	UC-O	South Ossetia	64	UB-D	Zaporozhskaya	114	UA1P	Arkhangel'skaya	162	UA6J	Khanty Mensyskiy
16	UL-B	Celinskoyadskaya	65	UB-U	Kievskaya	115	UA6U	Astrakhanskaya	163	UA6K	Yamalo Nenetskiy
17	UL-I	Aktubinskaya	66	UB-J	Kirovgradskaya	116	UA4	Deleted 1962	164	UA4L	Yanovskaya
18	UL-J	Alma-Atinskaya	67	UB-J	Krimskaya	115	UA4	Deleted 1962	165	UA6A	Chelabinskaya
19	UL-J	East Kazakhstanskaya	68	UB-W	Lvivskaya	116	UA3Z	Belgorodskaya	166	UA0U	Chimskaya
20	UL-U	Gurievskaya	69	UB-Z	Nikolavskaya	117	UA3Y	Bratskaya	167	UA6S	Orenburgskaya
21	UL-M	Jamboulskaya	70	UB-F	Odeskaya	118	UA3V	Vladimirskaya	168	UA3M	Yaroslavl'skaya
22	UL-I	Ural'skaya	71	UB-H	Poltavskaya	120	UA1Q	Volgogradskaya	169	UA1A	Leningrad
23	UL-P	Karagandinskaya	72	UB-K	Rovenskaya	121	UA1Q	Vologodskaya	170	UA3A	Moscow
24	UL-K	Kozl-Ordinskaya	73	UB-I	Donetskaya	122	UA3T	Gor'kovskaya	171	UA4D	Deleted 1984
25	UL-K	Kochetavskaya	74	UB-S	Ivano-Frankovskaya	123	UA3U	Ivanovskaya	172	UA4E	Deleted 1984
26	UL-F	Kustanayskaya	75	UB-A	Sumskaya	124	UA0S	Irkutskaya	173	UA4F	Sverdlovskaya
27	UL-C	North Kazakhstanskaya	76	UB-L	Temerskaya	125	UA2F	Kaliningradskaya	174	UA6T	Ust Ordynskiy Buriatskiy
28	UL-C	Semipalatinskaya	77	UB-L	Karlovskaya	126	UA3I	Kaluzhskaya	175	UA6V	Aginskaya Buriatskiy
29	UL-W	Taldy-Kurganskaya	78	UB-G	Hersonskaya	127	UA3X	Kaluzhskaya	176	UA6V	Turkey (1973)
30	UL-W	Taldy-Kurganskaya	79	UB-T	Herminkskaya	128	UA0Z	Kamchatkaya	177	UA6V	Narynskiy (1970)
31	UL-N	Chimkent'skaya	80	UB-C	Cherkasskaya	129	UA0X	Karagandinskaya	178	UL-R	Dzhuzkagan'skaya (1973)
32	UM-N	Deleted 1959	81	UB-R	Chernomorskaya	130	UA4U	Kirovskaya	179	UL-A	Mangshi'skaya (1973)
33	UM-Q	Izly-Kul-Prizhevsk	82	UB-Y	Chernovitskaya	131	UA4U	Komarovskaya	180	UH-B	Nebr Dag (1983)
34	UM-N	On'skaya	83	UR-R	Estonia	132	UA4H	Kubitskaya	181	UH-J	Kubitskaya Oblast (1973)
35	UM-N	Deleted 1959	84	UA0X	Bashkir	133	UA4H	Kurganskaya	182	UH-K	Kubitskaya Oblast (1973)
36	UM-M	Kirgiz	85	UA0D	Buryat	134	UA0Q	Kurskaya	183	UH-X	Kurgan-Tyubinskaya (1977)
37	UD-G	Latvia	86	UA6W	Daghestan	135	UA3W	Leningradskaya	184	UM-T	Talasskaya (1980)
38	UD-S	Lithuanian	87	UA6D	Kabardino-Balkarsk	136	UA1C	Leningradskaya	185	UL-O	Novoskaya (1982)
39	UD-Q	Moldavian	88	UA1N	Karelian	137	UA3G	Lopadskaya	186	UT-U	Kiev City (1984)
40	UI-J	Tadzhik	89	UA1I	Kalymk	138	UA0I	Magadan'skaya	187	UT-L	Sevastopol City (1984)
41	UI-S	Leninabad	90	UA6K	Komi	139	UA0K	Chukotskiy	188	UC-A	Minsk City (1984)
42	UI-J	Gorno-Badakhstan	91	UN-A5	Mani	140	UA0K	Perm'skaya	189	UL-A	Tashkent City (1984)
43	UH-H	Turkmen	92	UA0U	Mordovian	141	UA0G	Komi Perm'skaya	190	UL-G	Alma Ata City (1984)
44	UH-E	Maryskaya	93	UA6J	North-Ossetia	142	UA3D	Moskovskaya	191	UH-A	Ashkhabad City (1984)
45	UH-W	Tashkent'skaya	94	UA6P	Tatar	143	UA1Z	Murmanskaya			
46	UH-Y	Chardonskaya	95	UA6W	Udmurt	144	UA1T	Novgorodskaya			
47	UH-A	Andianskaya	96	UA6P	Checheno-Ingush	145	UA6D	Novosibirskaya			
48	UH-C	Bukharskaya	97	UA6V	Chuvash	146	UA6M	Omskaya			
49	UH-C	Kashkadarskaya	98	UA6Q	Yakut	147	UA3E	Orlovskaya			

SPECIAL NOTES TO OBLAST LIST

DELETIONS: 11, 32, 35, 61, 116, 171, 172
 MISCELLANEOUS: UA6A = UA6B, UP-B = UP-R
 UR-R = UR-T
 Call signs may begin with R or U — RI = UI, UZ = RZ, UB = RB, etc
 UKRAINE — UB = UT = UY
 RSFSR — UA = UN = UV = UW = UZ
 Call signs issued before 1971 may not follow this pattern.
 Club call signs can be identified by a W, X, Y or Z in the second letter following the number.
 The Oblast can be determined by the letter following the number for all Republics, except the RSFSR where the number and following letter are needed.
 Franz Josef Land stations are in Oblast 113 — UA10.

does not already read or write in the Russian language!

Using CW when in contact with USSR amateurs, one does run into some three-letter abbreviations of Russian words quite often, and I encourage DXers to use them as appropriate:

DSW means goodbye (pronounced dah see-DAH-neeyah)

SPB means thank you (pronounced spah-SEE-bah)

1. From the 1986 World Almanac and Webster's New Geographical Dictionary
 Thanks to Tom Frenay K1KI, for his assistance with the current Oblast Lists. For anyone who wants to keep up-to-date on the latest USSR amateur happenings should get K1KI's USSR Tidbits newsletter. Write to Tom at PO Box 62, Unionville, CT, 06085, USA for more information.

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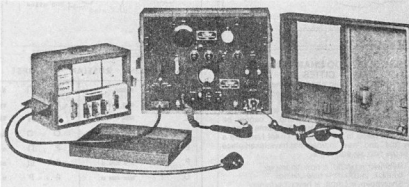
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ARMY WIRELESS SETS OF WORLD WAR II

Jim Payne VK3AZT
 PO Box 105, Yarra Glen, Vic. 3775



Field Wireless Set, No 109, Mark II*.

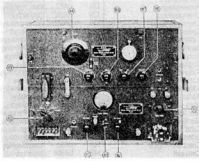
Most 109 sets constructed by Standard Telephones and Cables have a three valve transmitter and a five valve receiver covering 2.5 to 5 MHz. In the transmitter, 4307-A pentodes or 807 "Red Spot" tubes were interchangeable as master oscillator (Colpitts), power amplifier and modulator. In the receiver, 6U7G tubes function as RF and IF amplifiers. 6BG6 is a mixer, 6BG6 combines as second detector, AVC generator (RT only) and audio amplifier while 6J7 is beat note oscillator. In some early models the synchronous vibrator for the receiver power supply is mounted in the receiver while the HT supply for the transmitter is obtained from a synchronous split reed vibrator and filters in the power supply unit. Two alternative types of power units supplying both the transmitter and receiver are provided for later models. In one type the HT supply for the transmitter is obtained from a non-synchronous vibrator operating in conjunction with a selenium rectifier, while in the second type the rectifier unit has four 6X5-GT valves. A six volt 150 AH battery is usually used as the current drain is 2.7 amps on receive and 19.5 amps on transmit.

Power input to the final stage is about 15 watts. The carrying case containing the transmitter and receiver is 650 mm, 420 mm and 255 mm (WHD) and consists of a light steel angle welded framework, to which are welded panels of sheet motor body steel. The detachable lid is drip proof and held rigidly in place by two spring snap-action

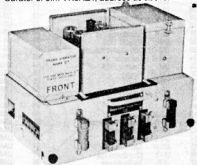
locks. The power unit measuring 370 x 345 x 215 mm is similarly constructed. Both cases are bonderised and finished with a heavy coat of hard stoved defence khaki green enamel. The set weighs 35 kilograms, the power unit 20 kilograms, the six volt battery 30 kgs and the antenna bag, etc. 9.5 kgs.

These sets issued as 109 Mark I, II, II* and II** were used by Australian Signal units in every campaign from 1940 to late 1944, when many were replaced by the 22 set. In the 109 Mark II, the power amplifier circuit was keyed and, if the neutralisation was not completely effective, a weak carrier was audible at close quarters with the Morse key open when working on WIT. In the Mark II*, the master oscillator circuit is keyed directly and the back signal is completely eliminated. Certain components of the later models were modified to withstand tropical climates with operating temperatures up to 55 degrees Celsius and relative humidities up to 100 percent. The Mark II** receiver is an improved design with a second 6BG6 valve providing an additional stage of audio amplification.

NOTE: The Curator, Royal Australian Corps of Signals Museum, Simpson Barracks, Watsonia, Vic. 3085, wants a 109 set for that museum. If any reader has such a set for sale, or can suggest where one might be available, kindly advise the Curator or Jim VK3AZT, address as above.



Transmitter/Receiver Unit, Front View.



Power Unit, Valve Rectifier Type, Removed from Case.

WHAT IS THIS THING CALLED AMTOR?

S E Molen VK2SG

13 Pendle Way, Pendle Hill, NSW. 2145

From time to time, readers may have heard of AMTOR. What does the name indicate?

There are two versions, one is **AMateur Teleprinter Over Radio**, the other is **Amateur Microprocessor Teleprinter Over Radio**. It is also known in the commercial field as the **ARQ** (Automatic Request Query), **FEC** (Forward Error Correction) or **TOR** (Teleprinter Over Radio) system. It is interesting to note that the amateur system will marry the commercial system, as both systems are designed to follow the CCIR (International Radio Consultative Committee) recommendation 476, and therefore follow exactly the same parameters.

The AMTOR code consists of the normal 26 characters of the alphabet, plus carriage return, line feed, figure case and letter case, the same as the normal RTTY signal, plus three extra characters used as control characters, these are designated as RQ, Alpha and Beta. The RQ signal is used as the request query and also in the original calling signal. Beta is used as an idle signal (when no traffic is flowing) and the Alpha is used as part of the hand over signal. Each character in the AMTOR Code consists of three lows and four highs, or three 000 and four 1111, or three marks and four spaces. The various arrangements of these highs and lows are all that the AMTOR system will accept. (Refer to AMTOR Codes, Table 1). The code is not compatible with either Baudot or ASCII. The actual transmitted signal is 100 Bauds, but the printer speed remains at 45 or 50 Bauds, whichever is selected.

Basically, there are three modes of operation:

- 1 Mode A — which is the automatic or ARQ mode
- 2 Mode B — or broadcast mode called FEC
- 3 Mode L — or listen mode (in this mode there are no transmission facilities)

In Mode A only two stations can communicate with each other. The originating station is called the Master or ISS (Information Sending Station), the called or receiving station is called the Slave or IRS (Information Receiving Station). The master station remains the master throughout the whole contact irrespective of which station is transmitting at any time, and as master, controls the timing of the whole system.

In Mode A operation the ISS (Information Sending Station) transmits three characters in 210 milliseconds, then goes to receive for 240 milliseconds, during the receive period the system looks for a logic reply from the IRS to indicate that the three characters have been received correctly, if the correct reply is received the ISS then proceeds with the next three characters, but if there has been an error in the reception at either end the last three characters are repeated until such time as they are received correctly. Both stations only acknowledge receipt of the correct logic signal

NO	LETTER	FIGURES	7-UNIT CODE
1	A	-	BBBYYVB
2	B	?	YBYYBBB
3	C	:	BYBBBYB
4	D		BBYYBBY
5	E	3	YBBYBYB
6	F		BBYYBBY
7	G		BYBYBBY
8	H		BYBYBBB
9	I		BBYYBYB
10	J	audible	BBBYBYB
11	K	(YBBBYYB
12	L)	BYBYBBY
13	M	.	BYYBBBY
14	N	,	BYYYBBB
15	O	9	BYYYBBB
16	P	0	BBYYBYB
17	Q	1	YBBBYBY
18	R	4	BBYYBYB
19	S	5	BBYYBYB
20	T	6	YBYBBBY
21	U	7	YBBBYBB
22	V	=	YBBBYYB
23	W	2	BBBYBYB
24	X	/	BYBBBYB
25	Y	8	BBBYBYB
26	Z	+	BBYYBYB
27	carriage return		YYYYBBB
28	line feed		YYBBBYB
29	letter shift		YBYBBYB
30	figure shift		YBBYBYB
31	space		YBBBYBY
32	unperforated tape		YBYBYBB
	- control signal 1		BYBYBYB
	- control signal 2		YBYBYBB
	- control signal 3		BYBYBYB
	- idle signal beta		BBYYBYB
	- idle signal alpha		BBBYYBY
	- signal repetition		YBBYYBB

AMTOR Codes: Table 1.

consisting of the 3/4 ratio, all other signals are treated as errors and are not printed. Therefore, interference, static, etc. does not cause misprints but only causes a slowing down of the traffic flow between the two stations, without any loss of traffic.

On completion of traffic in one direction an automatic changeover takes place by the sending station (ISS) transmitting +? (plus question-mark) when this is acknowledged by the receiving station (IRS) a change of direction of traffic takes place, and the slave station is now the transmitting station (but is not the master). In the event of a loss of signal for 15 seconds, the master station will then resume command and start calling the slave station, as it did at the start of the contact. When contact is re-established, the flow of traffic will

continue as though nothing had happened, so that if the slave station was the transmitting station at the time of loss of signal, then the slave station will resume sending traffic from exactly where it left off, and the master station automatically returns to the receiving situation.

With Mode A, there is the availability of complete break-in, so that if the transmitting station asks a question, the receiving station can immediately break in to reply, finishing his reply with +?, the original transmitting station carries on with his traffic as though there has been no interruption, but the reply has been printed in the middle of his outward traffic. This feature is very handy for quick question and answer, and saves a lot of time under some circumstances. A further feature of Mode A is that, on start-up (switch on) you insert your call sign, which must consist of four characters only, thus VK2SG would become VKSG and VK2RT would become VKRT, but VK2BVE would become VBVE, it is the usual practice to use the first character and the last three characters of your call sign, there are some exceptions to this, such as the countries that have figures in their call sign; eg 9M2CR who uses the call sign NMCR. On entering the four characters, your system is now on standby (selec) and may be left in this state indefinitely, as it will not operate unless it receives your designated call sign (selec). As soon as it detects your call sign it will start to reply to the calling station as though you were present, and will receive any message sent to it. The sending station, upon receiving the correct reply, will then be able to send traffic to you, and know that you have received it correctly, because you have given all the correct replies. There is another feature that can be used at this time, and that is the delayed copy, this is a delay of your transmitted message that is not printed at the transmitting end of the circuit until the correct reply (control character) is received, and then it is printed. In this way, you not only know that you have sent the traffic, but you can see that the receiving station has received it correctly.

While you are in stand by, any other station may operate on the frequency without disturbing your system, because your system will only activate on your call sign, and not any other. Similarly, you may call another station's equipment by inserting their call sign into the Mode A facility. As soon as the call sign is entered, your system will start calling that station, and will start looking for a reply; as soon as it receives a reply, it will then go into traffic mode, and if you have any traffic to send, you may now proceed. At this point, both the transmitting and the receiving station may start to load their buffers, or should one, say pre-load, their buffers with up to 1024 characters (16 lines) and these characters will flow out at normal rate.

Mode A does have one disadvantage, and that is distance. Because the radio waves travel at 300 km per millisecond, there is a time delay between the time the signal is sent and the time that it is received at a distant point; as we have to wait for a reply from the distant station there is a further delay on the return path. If one considers a station, say 18 000 km away, the signal and the reply has to travel 36 000 km which will take 120 milliseconds on a direct path. To this we must add the 70 millisecond reply control character which brings us up to 190 milliseconds. Unfortunately there are several other delays to be considered. Firstly, there is the delay of the transceiver, that is the time taken to go from receive to transmit at half power. This is usually in the order of 15 to 20 milliseconds, so we now have to add another 40 milliseconds to our delay time which brings us to 230 milliseconds. The path of the radio waves is not a direct line but a trip to the ionosphere and back. This takes more time, so that in the end we see that there is not enough time in receive to receive the full correct control character before we go back to transmit; it therefore becomes apparent the path length has a great bearing on the Mode A communication.

By speeding up the switching time of the transceiver, (refer Note 1), both from receive to transmit, and from transmit to receive, and if one could get the switching speed down to about two or three milliseconds, then the long path to Europe would be possible, provided that you can find a station in Europe that can operate at the same speed. Inversely, the short path to Europe presents very little problems as far as Australia is concerned as it is short enough to be able to operate Mode A with ease. The usual way to operate the transceiver is in the break-in mode with the AGC switched off. If it is still slow, then you might have to do

some work inside the transceiver to eradicate some of the delays that are in-built. In actual fact, the delays of the transceiver will only be detrimental to the long haul signals, as, in the main, local contacts would be fairly easy unless you run into a very fast transceiver. The accuracy of Mode A may be judged by the following when compared with normal RTTY.

NORMAL RTTY	AMTOR
100 percent	100 percent
90 percent	99.9 percent
80 percent	99.8 percent
70 percent	99.7 percent
60 percent	99.5 percent
50 percent	99.2 percent
40 percent	98.8 percent
30 percent	98.2 percent

On the worst case shown, the traffic transfer speed will have dropped from 60 WPM to approximately 50 WPM, but still with almost complete accuracy.

With Mode B, or broadcast mode (FEC), we have operating conditions that are similar to normal RTTY, that is, key down all the time with no breaks. In this mode, we are again using the 3/4 ratio of the digital code so the receiving station still has the same logic letters to look for, and will therefore only accept correct logic, but as there is no check-back with the sending station, and therefore no possibility of detecting an incorrect letter, each character is sent twice but spaced 350 milliseconds apart. This spacing is used to allow time for static burst, car ignition, etc., and therefore removes some of the possibility of both letters being mutilated by one burst of static, etc.

The receiving station looks at the two characters, if both are correct logic it will only print one of them, but if there is a mutilation of either character, it will delete the incorrect logic character and print the correct logic character. If both characters are mutilated, and this can happen, it will then not print either but will leave a space where the character should be, therefore you are not getting garbled print, rather correct characters with letters missing. The sending speed is again 100 Bauds and the speed of the printer is 45 or 50 Bauds, whichever you have selected. The transmitter procedure is as follows:

A B COABFCGDEIFUG etc.

If you are typing at 45 Bauds there will be times where the transmitted message is ahead of the typed message. At this point, idle signals are automatically inserted, so that the receiving station may have a look at the correct phasing of the signal and make adjustments inside the system that may be necessary. There will be times when the signal is not good enough for a perfect print and therefore errors will creep in, in Mode B; this mode is not as accurate as Mode A but is a great improvement on normal RTTY. The handover in this mode is a mechanical operation and the operator has to make the changeover. It is not an automatic function as with Mode A.

Mode L is a listen mode only and has no transmit facility. It is purely intended to look at the operation of other stations in Mode A and Mode B, with Mode L you can look at both Mode A and B. The accuracy of this mode is no better than normal RTTY; as it is not an operating mode it is of no consequence.

NOTE 1:

ANARTS (Australian National Amateur Radio Teletype Society) has a list of switching speed modifications for 41 transceivers. For further information, write to: Box 860, Crownes Nest, NSW and please include a suitable stamped addressed return envelope.

Parasitic Beam Program for the Microbee

Karl Saville VK5AHK

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The following program is translated from the Parasitic Beam Program for the Commodore 64 by Joseph Ortuso VK7NJO, in June 1986 issue of Amateur Radio.

The Microbee program is not a direct conversion to the Commodore one and, because of the difference between the two basics, I have approached the solution in a slightly different way and the Read-out format is arranged differently.

However, I must thank VK7NJO for presenting a very interesting program which has given me some pleasure in converting it for the Microbee.

The program has been checked out over the range of 14 to 432 MHz against data for three element beams, in the 1979 *Radio Amateur's Handbook*, and the results compare favourably.

The program requires two inputs: Frequency and Spacing of the elements. The latter spacing being common to all elements.

The Read-out gives the lengths of the driven, reflector and director elements, in both feet and metres and also gives the approximate radiation resistance.

```

00100 REM: A program to calculate
      dimensions for a 3 element parasitic
      beam, for the Microbee, by H K
      Saville VK5AHK, 1986
00110 CLS: CURS 20,1:PRINT "Parasitic
      Beam Program":CURS
      20,2:PRINT[A22 61]
00120 CURS 1,4:PRINT "Use 1.5 in OD
      tubing for 14 MHz and 1 in for 21 and
      above"
00130 CURS 1,5:PRINT "The forward gain
      for various spacings is between 7.5
      and 8 dB"
00140 CURS 1,6:PRINT[A62 45]
00150 CURS 1,9:INPUT "Which frequency
      (MHz):" F1
00160 CURS 1,10:PRINT "Which
      spacing":INPUT S1
      D1 = 435 + ((S1-0.1)*150):D2 = D1/F1
      R1 = 480 + ((S1-0.1)*120):R2 = R1/F1
      A1 = 475 - ((S1-0.1)*50):A2 = A1/F1
      H1 = 15 + ((S1-0.1)*400)
      W1 = 30000/F1
      W2 = W1*S1/100
      W3 = W1*S1/100/305
      CLS:X1 = 0.305:A3 = A2*X1:D3 = D-
      2*X1:R3 = R2*X1
00250 CURS 24,1:PRINT "ELEMENT
      LENGTH":CURS 24,2:PRINT [A14
      45]
00260 CURS 10,4:PRINT "For "F1:"MHz
      and "S1:" of wavelength
      spacing":CURS 10,5:PRINT[A46 45]
      CURS 10,6:PRINT "Driven El. "[F8.2
      A2]:" ft or "[F8.2 A3]:" m"
00280 CURS 10,7:PRINT "Director "[F8.2
      D2]:" ft or "[F8.2 D3]:" m"
00290 CURS 10,8:PRINT "Reflector "[F8.2
      R2]:" ft or "[F8.2 R3]:" m"
00300 CURS 10,9:PRINT "The spacing is
      "[F8.2 W3]:" ft or "[F8.2 W2]:" m"
00310 CURS 10,10:PRINT "Radiation
      resistance is approximately
      "[H1:"Ohms"
00320 CURS 10,11:PRINT[A46 45]
00330 CURS 1,15:PRINT "Would you like to
      compute again, Y or N?"
00340 ZOS = KEY$:IF ZOS = " " THEN 340
00350 IF ZOS = "Y" OR ZOS = "y" THEN 100
      ELSE END

Parasitic Beam Program
Use 1.5 in OD tubing for 14 MHz and 1 in for 21
and above
The forward gain for various spacing is
between 7.5 and 8 dB

Which frequency (MHz) 28.25
Which spacing? .175

ELEMENT LENGTH
For 28.25 MHz and 0.175 of wavelength
spacing

Driven El      16.68 ft   or 5.08 mt
Director       15.79 ft   or 4.81 mt
Reflector      17.30 ft   or 5.27 mt
The spacing is 6.09 ft   or 1.85 mt
Radiation resistance is approximately 45 ohms

Would you like to compute again Y or N?
```

NOT A RESCUE, BUT —?

Harry Atkinson VK6WZ

5/97 Railway Parade, Mount Lawley, WA. 6050

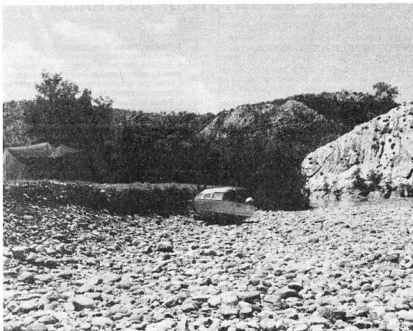
The way some people put to sea in small craft these days you'd think they had a whole team of guardian angels looking after them.

While those engaged in the call-backs on VHF and the other HF relays after the broadcast remained unaware of the possible drama going on up at Dugong River, Don and Ron were exchanging reports and arranging scheds for later in the day. Ron gave his position as 123° 51'E, 16° 37'S.

Despite a fear of leaking fuel and the onset of a period of illness, Ron and his first mate made it out from the river into the open sea and moved slowly and cautiously homeward. VK6UF expressed his heartfelt thanks to Don and others on the frequency who stood by in case rescue procedures had to be set in motion.

Recalling the incident Ron says there is no substitute for radio — particularly amateur radio — when away miles from anywhere and anyone. There is also no substitute for knowing where you are going and having on hand everything you are likely to need, no matter what the ultimate outcome.

It was not a rescue, but —? What if — no chart of the area, no hull repair outfit, no radio?



First Low Tide — PM Saturday.

Ron Dent VK6UF, however, is not like that.

On Saturday, March 14, Ron and his 17½-year-old "first mate" set off in their 5.2 metre runabout Arjay for a fishing and camping weekend at Ron's favourite "barra" spot, up river from Dugong Bay.

This spot is about 45 km from Ron's home and saltmine, Koolan Island, right up at the "top end" of Western Australia. And here's what Arjay had on board that March morning in addition to his human cargo.

A 65 hp main engine; a 6.5 hp emergency motor; food, water, fishing tackle, red and orange flares (both smoke and parachute type) and adequate fuel. A "crocodile dissuader" (.44 calibre magnum with 100 rounds of hv hollow-nosed ammunition); TS-430S transceiver; AT-300 tuner; 27 MHz AM marine band radio with 11 foot whip; RDF beacon (water activates) fire life jackets; solar panels for emergency power and a hull repair outfit.

After an initial loss of 45 minutes — due to cleaning fuel line, filter and fuel pump because of a decision — wise as it turned out — to run on the 60 litres of emergency fuel for starters, petrol which turned out to be like some wine "over the hill" — the intrepid duo set off. But not to worry. The main tanks held 120 litres and even if the remainder of the emergency 60 stayed on just for the ride as dead weight, there was 40 more litres stored away at the campsite.

Motoring along at 25 knots, they reached the mouth of the river at 1030 hours and, while waiting for the tide to rise and fill the creek with navigable water, caught themselves a small barra (weight 4 kg). An hour or so later, they were setting up camp.

Finally the boat was moored and the tide going out at 1700 hours. They felt they were in for a good weekend of fishing in the rock pools along the river bed. With Arjay gently settled at her moorings, the pair went walking along the river bed and brought back to camp eventually another barramundi and a couple of rock cod — a total of 18 kg!). The evening meal and listening to the night sounds — fish jumping and crocodiles barking — filled the time to lights out with a plan to be up bright and early next morning, for more fishing on the next low tide. Ron got up during the night and, by light of the full moon, with no wind and a balmy 25 degrees Celsius temperature, satisfied himself that all was well with boat and crew.

However, at daybreak, Arjay was high and dry on the rocky bed with its side hard against the bank and at an angle which placed the pressure of the boat's weight not on the keel — the thickest and strongest part of the hull — but on the forward gunwale, the thinnest part. As a consequence, there was a 150 cm crack below the water line, but above the flotation tanks.

However, says Ron, no worry. Good old epoxy and five minutes work and all was 100 percent again. But would Arjay at that angle cope with the next incoming tide? It was then that the TS-430S came into play. Shortly before 9.30 WA-time on Sunday the 15th, VK6UF called Don VK6HK, on 14.110 MHz during the test period prior to the VK6 WIA News Relay. Would Don stand by for the next few hours while the campers waited for the noon tide to get them afloat and on their way home?

Of course he would, said Don. And so the time passed while the WIA Bulletin went to air.



Second Low Tide — AM Sunday, looking upstream.

SOLAR CELL

Sanyo of Japan, has developed the world's first translucent amorphous solar cell.

An exclusive cell structure and patterning technology allows natural light filtration and simultaneous generation of electric power from solar energy.

Sanyo says it can be used for a wide range of applications including home and motor vehicle windows, skylights, also outdoor and indoor artificial greenhouses.

DEVOLVEMENT OF EXAMINATIONS

SUBMISSION FROM THE WIRELESS INSTITUTE OF AUSTRALIA

1 INTRODUCTION

The Wireless Institute of Australia is the national body which represents the interests of all amateur radio operators throughout Australia. It has members in all States, in remote as well as urban areas, who have between them a vast reserve of expertise in practical, technical, educational and administrative fields and a reputation for willingness to assist the newcomers to the hobby.

The Institute is very aware of the need for present and future amateurs to have equal access to examinations whatever their location, available time or other constraints, and to have examination costs kept to a minimum.

Discussion at the Federal Convention re-emphasised these issues raised in the Institute's Interim Submission, and stressed the desirability of a uniform examination standard for candidates throughout Australia. This uniform standard has been traditionally maintained by examinations administered by a single body, the Department of Communications. It is the Institute's opinion that this single controlling body system should be retained.

2 REQUEST FOR ACCREDITATION

The Wireless Institute of Australia (WIA) requests that the Department of Communications (DOC) accredit it as the sole examining authority for Amateur Operator Certificates of Proficiency.

The Wireless Institute of Australia is the only body concerned with amateur examinations which has representatives in all States and a widespread network of willing assistants throughout the nation. Because of its close liaison with DOC over many years, the Institute has a good understanding of the problems involved in the present examination system, and the requirements of any future system.

The assumption of control over the examination system does not preclude other bodies. WIA Divisions, clubs, educational establishments or individuals, from arranging and managing examinations as required using materials prepared and supplied by the Institute's Examination Officer.

The Institute expects, as the examining body, to reserve the right to delegate or contract out the preparation of examination materials as required.

In this way, the most efficient use can be made of the vast reserve of expertise available within the membership.

3 REQUEST FOR ACCESS TO EXISTING EXAMINATION MATERIALS

The Institute requests access to the existing DOC question banks and the programs for computer generation of examination papers and Morse code examination tapes.

These items are needed as a starting point for the Institute's examination materials so that the existing standard can be maintained. The first few papers produced by the Institute should comprise at least 80 percent existing questions, and the tapes should continue to be produced from the existing program.

Review of the existing questions by the Examinations Committee will establish the pattern and level for future additions to the banks.

4 REQUEST FOR A TRANSITION PERIOD

The Institute requests that a transition period of at least 18 months be allowed so that it can fully develop the required infrastructure and procedures.

It is suggested that during this period the Institute will first assume responsibility for supervision of examinations, gradually moving into preparation and distribution of examination materials to a mutually agreed timetable.

5 THE INSTITUTE'S RESOURCES

The major resource of the Institute is the experience, expertise, equipment and enthusiasm of its members.

The membership includes theoretical and practical engineers, able to produce and criticise questions, experienced and practicing educators capable of validating and evaluating questions, computer experts to produce or maintain the necessary programs, and administrators with experience of both public and private industry.

Expert advice can be obtained from within the membership on all aspects of the establishment of an Examinations Section. Assistance will be forthcoming from experienced personnel for the production of questions and the preparation and assessment of Morse code tapes.

Nevertheless it is not intended that the Institute will rely on volunteer labour for the whole of the examination program.

(a) Physical resources

The Executive has agreed to provide the necessary office and associated equipment to enable the establishment of an efficient Examinations Section separate from the Executive.

(b) Human resources

The Institute was directed by the Federal Convention to employ an Examinations Officer once accreditation is received, so that examination procedures can be established rapidly and an effective system developed. This position is seen as handling the production and distribution of examination materials, marking papers and tapes, notifying results and maintaining records of individual candidate status.

A number of members have already indicated their interest in joining the Committee to assist the Examinations Officer by producing appropriate materials such as study guides, and multi-choice questions. The wide geographic distribution of Institute members will ensure that candidates throughout Australia have access to examinations as required.

6 THE INSTITUTE'S INTENTIONS

On being granted accreditation the Institute will proceed to carry out the directions of the Federal Convention with regard to:

- Employing an Examinations Co-ordinator;
- Establishing an Examinations Committee to:
 - Finalise approval and publication of a NAACP Study Guide;
 - Prepare a draft AACP Study Guide to accompany the ACP/AOLCP Syllabus, submit it to DOC for approval and subsequently publish it.

3 Review the existing question banks and amend as required.

4 Extend the existing question bank by adding new approved questions.

5 Enter the extended question bank into an appropriate computer.

6 Develop a suitable computer program to select questions from the bank for an examination paper as required.

7 Publish a sample question paper from the bank at each level annually.

It is also intended to:

- establish communications with groups or individuals likely to desire to conduct examinations, with a view to developing a protocol;
- appoint members in Divisions, clubs or other bodies to be responsible for the local arrangements for examinations;
- arrange publication of the procedures required for entry to WIA controlled examinations;
- when the question bank reaches approximately 1000 questions at each level, publish the bank and make provision for update and review as necessary. Similar arrangements will apply for the Regulations questions, but a bank of 300 questions should suffice.

7 OUTLINE OF PROPOSED EXAMINATIONS SYSTEM

The Institute sees two components to be requirements for establishing an examinations system:

- The "Central Office" component which deals with the preparation and distribution of examination materials, their return for marking, the distribution of results and maintenance of records.
- The "Field Staff" who assume responsibility for the local arrangements when an examination is required or scheduled in a particular area. These members would arrange a suitable time and venue and an appropriate invigilator, who would receive the papers or tapes, supervise the examination, and return papers or tapes to the "Central Office". Responses so far received allow the Institute to be confident that sufficient volunteer "Field Staff" will be forthcoming for examinations to be conducted at the current frequency but at an increased number of centres. The necessity for proposed dates of local examinations to be advertised in advance has also been foreseen.

8 PRIORITIES

Of the intentions listed in Paragraph 6, the Institute sees the priorities as, in order:

- Establishing the committee
- Finalising the NAACP Study Guide
- Preparing the ACP/AOLCP Study Guide
- On receiving accreditation
 - employing a suitable Examinations Officer;
 - establishing the network of Field Co-ordinators;
 - establishing a system for production of examination materials;

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AMATEUR RADIO IN AN EMERGENCY SITUATION — 1929 The VK3RJ Story

Maurie Milani VK3CWB
PO Box 2742, Mildura, Vic. 3500



This is a factual, historical story about one of Australia's amateur radio pioneers, the late Ray Jones VK3RJ. The article has taken 18 months to research, with Ray providing much of the information, however Ray passed away at the end of May unfortunately not seeing the labours come to fruition. It was to be a tribute to Ray but now becomes his Obituary. Vale Ray Jones VK3RJ.

During this time he was stationed at RAAF Headquarters, No 2 Training Group Headquarters, Eastern Area Headquarters and North Western Area Headquarters. In 1945, he returned to the PMG where he remained until his retirement in 1960.

In passing, Ray quickly mentioned that his amateur radio station assisted the PMG in a time of crisis. His radio was used as a means of passing telegraphic traffic. (I later discovered that there were in fact five occasions when his radio station was used). What happened was when normal telegraphic links could not pass the traffic Ray made his amateur station available to the PMG in order to have the traffic passed to the required destination.

The story goes something like this . . . In April 1929, torrential rains for several days caused intense flooding in central Tasmania. As a result, all rail, road and communication links (including telephone) between the north and south of the State were cut off for at least four days. Ray was working at the Melbourne CTO as a telegraphist when the news came to hand. All lines between Launceston and Hobart had been swept away by the floods with the north and south of the State basically being isolated. The real problem lay with Hobart which was totally cut off from the mainland — Launceston still had these links.

Ray stated: "I immediately approached the Assistant Superintendent of Telegraphs, Mr Jim Allen. With the confidence of comparative youth, and zeal for amateur radio, I told him I could provide him with a radio link to Hobart." Ray remembered Mr Allen as being a man with an iron fist who was brought to the CTO for the express purpose of upgrading the then existing poor service as well as the poor discipline and morale. Mr Allen exercised his power ruthlessly and was renowned for punishments for any slight misdemeanour or failure.

The need for communications to Hobart was becoming desperate, but Ray's radio scheme received great opposition the Superintendent, as well as the more powerful ranks of the hierarchy. Eventually, Jim Allen took a gamble with Ray's

proposal, but, in so doing, he clearly indicated to Ray that his future was on his shoulders. (In retrospect, one should have said that his future lay in his hands — the ones that sent the Morse).

Amalgamated Wireless of Australia (AWA), who then ran the ship to shore radio service, were also contacted to see if they could render any assistance. Ray explained: "They replied that they were unable to assist as their own traffic demands could not be abrogated to release VIM and/or VIH for PMG traffic." Thus, it seemed Ray's plan was the only viable alternative to normal telegraphic links.

Jim Allen asked Ray to nominate an amateur operator in Hobart who Ray deemed capable enough for the task at hand. Ray immediately thought of Trevor Watkins, then VK7DX. Having spoken with Trevor on many occasions, Ray was conversant with his fine Morse ability. The "powers" in the Telegraph Branch then requested VIM to send a message to VIH, directed to Mr Andrews, the Superintendent of Telegraphs, Hobart. The message was to inform him of what was to take place until normal communications could be restored. It also informed Trevor VK7DX, to meet VK3RJ on 7 MHz.

Ray was sent home immediately in order to prepare.

At the scheduled time, Trevor appeared and contact was made immediately. Ray spoke to the Superintendent, Mr Andrews, through Trevor, and told him he had traffic to pass. Ray had brought a bundle of about 30 Telegrams home with him. This was only a small portion of the many hundreds which had begun to accumulate in the Melbourne CTO. He then commenced transmitting them to VK7DX. Mr Andrews, listening in Trevor's shack, was so impressed that he immediately gave the operation his blessing.

Hence, on April 5, 1929, the operation commenced just after mid-day and continued until well after 6.30 pm when they were instructed by the administration to close down. On the second day of operation, the PMG installed a Morse line between Ray's home in Box Hill (where he resided until his death), and the CTO, Melbourne. A telegraphist was positioned at Ray's home to pass traffic from the radio link to the CTO and vice-versa. The second day of operation again commenced about mid-day. This worked smoothly and efficiently until about 9.30 pm when conditions on 40 metres were no longer favourable for propagation between VK3 and VK7. After a quick meal-break, the two operators had agreed to QSY to 80 metres. On this band they worked until well after 2 am.

By modern standards, this band change seems quite simple, however at the time it posed a problem for Ray. His equipment consisted of a Tuned Plate, Tuned Grid (TPTG) self-excited oscillator, with no external or extra amplification. The transmitting valve was a UX112A and power out was about four and a half watts (250 volts at 20 mA). The power supply was made up of a Philips B Battery Eliminator transformer, the output of

During early 1986, I had the pleasure of meeting Ray Jones VK3RJ. Ray had obliged in assisting me with my research concerning the late Leo G Cohen. Most CW operators of old, ex-PMG telegraphists, and other Morse related areas will recognise the name as being the one which is on the name-plate of the Simplex Auto. This device was a mechanical, semi-automatic apparatus for sending Morse code manually, and was often referred to as a "bug." (After the American company called Vibroplex which made a similar device many years earlier. This company used a small red coloured bug or beetle on the name-plate as its insignia).

Some of the Simplex Autos made were unique in that they had a pendulum positioned at a right angle to the finger paddle. There was also a model which produced automatic dashes.

Cohen, a telegraphist with Ray in the 1920s and 30s, was the designer of this type of key, many of which still remain in the shacks of radio amateurs today.

During the course of my interview, Ray spoke of the early days of amateur radio in Australia. He mentioned that his call sign, VK3RJ, was obtained in July 1928 and by December he was on the air. From about 1914 to 1960, Ray was involved with Morse code in one form or another with his occupation.

In 1914, aged 14, he began his career as a PMG "messenger in training" a position which eventually led Ray to becoming a telegraphist.

He enlisted in the Australian Imperial Force (AIF), Wireless Unit, in 1918. After the war he returned to his position with the PMG.

In World War II, he spent five years in the Royal Australian Air Force (RAAF), wholly in signals.

which was rectified by a Raytheon tube. Antenna was an end fed Zepp (halfwave at 7 MHz) with open wire tuned feeders.

Being relatively new to the amateur bands, Ray's equipment was not set up for the 80 metre band and at the time of the operation he had no materials to construct the required inductances for this band. Ray had to resort to compressing the 7 MHz inductance with a piece of string. The variable capacitors in the 1PTG, combined with the compressed inductor, sufficed for Ray to obtain a steady signal on what eventuated as the 82 metre band. The late Max Howden VK3BQ, lived close by and rendered invaluable assistance in getting Ray on-air in the 80 metre band.

Trevor reported that, whilst Ray's signals on this band were weak, but readable, he was suffering from a power leakage. Still the two operators carried on until after 2 am — the third day of activity. Both operators, needless to say, were physically and mentally exhausted after the long hours of continual sending and receiving.

According to Ray, the way in which Trevor put his messages over made him assume he was having no troubles, when in fact Trevor was working under great difficulties. Max Howden's article in the *Listener* in for April 24, 1929, stated that rain had completely wet Trevor's radio apparatus. After having realised this Trevor took great care to ensure the crystal he was using was bone-dry. He then switched on the apparatus, but was unaware at this stage that water had entered the filament transformer which was used to heat the filaments of his UX261 rectifying valves. Max went on to explain that the plates of these rectifying valves are connected directly to the high potential side of the power transformer. The filaments then become the centre of the positive HT supply, and are connected directly to the plates of the transforming valves, and consequently the plates are well insulated from any earth connection. One side of the AC mains which feeds this transformer is always earthed so the effect of water in this particular transformer can be realised.

After initial turn-on, and many fizzes, pops and other strange sounds, understood and recognisable only by a radio experimenter, Trevor immediately switched off the apparatus to prevent that damage was done. At this stage he was still not on the air, and the sched time with VK3RJ was fast approaching. Trevor set to work drying out the filament transformer. He wiped and shook it well then placed it in a hot oven for a few minutes. When he finally got on the air troubles still plagued him. The aerial feeder condensers started to smoke due to their insulating strips being saturated, but VK7DX could wait no longer and let them burn as he transmitted.

Max Howden further commented: "Had he used anything but crystal control, it would have rendered his signals unreadable!" The crystal had prohibited any wave change even though the capacitors spoiled. Trevor was of the opinion that his signal, as a consequence, was only slightly down to usual. At the end of the entire operation, Trevor swore that he would encase his entire apparatus in plywood so as to avoid the same sort of mishap in future.

April 7, marked the last day of the operation. It began at approximately 8.45 am and concluded at 8 am. Transmission was entirely on 40 m Australia.

Just prior to the day's commencement of transmissions the two operators were informed that a temporary cable had been placed across the flooded area which restored normal communication circuits. Thus the stint came to an end. Ray had sent 226 telegrams and received 174 from Trevor. Also, about 25 000 press-words were sent to and fro for the major newspapers in each city.

Transmission was all on CW with both parties using "bugs." Ray suggests that his may have been a Simplex Auto. To quote his words: "So concluded an operation which I feel helped to put amateur radio in enhanced public and administrative esteem, and to demonstrate its efficiency in times of emergency for the first time in Australia." Ray also commented: "I got no recompense (nor did I expect any), other than that I proved my optimism was well founded. All the kudos seemed to go to Jim Allen, for shortly after he was promoted to Superintendent of Telegraphs, Brisbane. Such is life!"

COMMONWEALTH OF AUSTRALIA.



POSTMASTER-GENERAL'S DEPARTMENT.

GENERAL POST OFFICE.

MELBOURNE, C.1.

6th May, 1929.

Dear Mr. Jones,

It has come to my notice that in the recent emergency created by the disastrous floods in Tasmania, when normal telegraphic communication between Hobart and Launceston was interrupted, you voluntarily placed your radio station at this Department's disposal for the exchange of telegraph business between Tasmania and the Mainland. It is further shown that you worked considerable overtime in disposing of traffic under difficult conditions and in addition incurred expenditure in the purchase of material essential to the working of your station. Approval has of course been given to the cost in the latter connection being refunded to you but quite apart from that aspect of the matter I wish to express my warm appreciation of your unselfish action in coming forward at a time of great emergency. The facility which you afforded for the transaction of telegraph business materially assisted in allaying public anxiety as to the position in Tasmania and your conduct exemplifies the true spirit of public service. The circumstances have been made the subject of an appropriate entry upon your Departmental record and I may add have also been brought under the notice of the Secretary of this Department.

Yours faithfully,
R. E. Jones,
Telegraphist,
Telegraph Branch,
Melbourne.

It would be remiss not to mention some other amateurs in the two States which, as the records of the time show, played a part. Their involvement is uncertain however research seems to show their role was probably that of standby stations in case VK3RJ and/or VK7DX ran into difficulties. These stations were Len Crooks VK7BQ, Crosby Walsh VK7CW, Hubert Lovett VK7HL, L. Jensen VK7LJ, E. Simms VK3KS and B. Hardie VK3YX. (VK3YX was then secretary of the Victorian Division of the WIA). Evidence suggests that VK3YX made contact with VK7CW and sent him outstanding news items of the day for publication in the *Hobart Mercury*. This was apparently done after permission was granted by the then Director of Postal Services, Mr H. P. Brown. A Melbourne newspaper obliged and the items were transmitted to Hobart. This initiative, although short-lived, was successful and effective.

Ray assisted the Telegraph Branch on a further four occasions, however the operator at the other end was no longer VK7DX as Trevor Watkins became a Silent Key on August 25, 1931. At a guess from those who knew him, they placed his age at somewhere between 45 and 55. His obituary in the *Hobart Mercury* August 28, 1931, suggests he was afflicted with the illness, which eventually claimed his life, even during the above-mentioned flood situation.

For the VK7 Division of the WIA, as well as many others world-wide, "Watties" death hallmarked the end of an era. In brief, he served as a VK7 WIA Councillor from 1926 to 1930. He also took an active part in the guard station of the Airforce Wireless Reserve in 1928 and 1929. Bill VK7TE, (today) suggests that "Wattie" was given Life WIA Membership in 1930.

In late December 1931, Ray again assisted the PMG but details are sketchy. After examination of Ray's logs for that time, it seems that the operator in Tasmania was Crosby Walsh VK7CW. The message load handled and exact dates are unrecorded. Official departmental acknowledgment confirms that the operation took place during the pre-Christmas week. Ray stated; "Mr Lawrence did not confer plaudits lightly!" There is no doubt to the validity of this operation.

Next operation was from July 1 to July 3, 1932 when the Bass Strait cable suffered a break-down. At this time it is impossible to ascertain who the Tasmanian connection was, but possible candidates are VK7CW and VK7JB. However, it does seem unlikely that it would be VK7JB, as he was only licensed on June 12, 1932, and, at the time of the operation, would have been a relative newcomer to the bands and unaccustomed to the traffic load involved. The actual operation lasted for three days, and Ray recalled some hundreds of messages being handled. Unfortunately no official departmental records exist of this exercise and Ray could find no reference to it in his log book. The evidence however lays within a few personal notes referring to dates, times, etc. written during and shortly after the event. Ray was unable to account for the lack of documentation.

Ray was again involved in another cable break-down between Tasmania and the mainland from September 29 to October 1, 1934. The Tasmanian connection was Jack ("Buck") Batchler VK7JB. Jack was a proficient CW operator by the time and someone Ray had many contacts with on-air. Jack's home-brew equipment consisted of a transmitter using a pair of 800s (in push-pull) in the final. (Permission to use increased power was

WATTIES OBITUARY

THE LATE MR TREVOR WATKINS, AMATEUR WIRELESS EXPERIMENTER.

With the passing of Mr Trevor Watkins, whose death occurred on Tuesday last (25.8.1931), after a long illness, Tasmania has lost a foremost wireless experimenter. He was the first person in this State to broadcast music by wireless, from his private transmitting station in Hobart, and for several years devoted himself to the study of radio and the development of radio ideas, many of which have been adopted by fellow experimenters who were in communication with him here and from other parts of the world. His special branch of study was wireless telegraphy, and as an amateur operator his familiar call sign, "DX" was known in every part of the world where radio amateurs are established. Many of the formal acknowledgments of receipt of his transmissions (of which he possessed hundreds) testified to the excellence of his work at the Morse key. It was quite a usual thing for him to be on the air almost daily with fellow experimenters in several continents, his opinion on the adjustment of transmitting apparatus being much sought after. In a number of successful tests his work was highly appreciated by the signalling section of the Royal Australian Air Force, his station in Hobart being the section guard station for this State. In 1925, in competition with a large number of others in Australia and New Zealand, he had the honour of winning the trans-Pacific tests for amateur radio operators. During the severe floods in 1929, when departmental telegraph lines were out of action between Hobart and Launceston, his private station was on the air almost continuously for two days and two nights and for the greater part of the time Mr Watkins, though a sick man, stuck to his instruments with very short intervals for sleep, receiving and dispatching many thousands of words of press news. A most unassuming man, with a very genial disposition, ever ready to pass on his knowledge to fellow experimenters, "Wattie" as he was called by radio friends here and in different parts of the world, will be much missed.

Telegrams of sympathy from the divisions of wireless institutes on the mainland received by his relatives all bear testimony to his sterling worth. Young men of his type can ill be spared.

At the graveside at Cornelian Bay yesterday, where the funeral service was conducted by the Rev. W. Barrow, a large gathering of representatives of departmental, commercial, and amateur wireless bodies paid their last respects to the deceased, the pall-bearers being well-known amateur wireless operators.

—From The Hobart Mercury August 28, 1931

COMMONWEALTH OF AUSTRALIA.

PAGE 3

ALL COMMUNICATIONS TO BE ADDRESSED TO THE SECRETARY.

POSTMASTER-GENERAL'S DEPARTMENT.

TREASURY GARDENS, MELBOURNE. C. 2. TELEPHONE: CENTRAL 5551

IN REPLY PLEASE QUOTE

NO. R.29/2541.

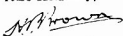
24 APR 1929

Dear Mr. Jones,

In connection with the recent serious interruption to telegraph communication in Tasmania, I desire to express my appreciation of your public spirited conduct in placing your radio station at the disposal of this Department for the transaction of public business. The willingness with which you volunteered to assist the Department in its difficulties proved of invaluable aid in organising emergency services and thus materially assisted in relieving public anxiety regarding the disaster which had befallen Tasmania.

Will you please accept my very sincere thanks for your valuable assistance.

Yours faithfully,



Director-General.

R. Jones, Esq.,
Telegraphist,
Chief Telegraph Office,
MELBOURNE, C. 1.

given by the authorities so the transmitter could be used during the PMG emergency). The antenna was a full 7 MHz Zepp and the receiver a five-valve superhet. The Commonwealth Archives in Hobart recorded that the power input at the time for VK7JB was 70 watts. The frequency designated by the PMG was 7.195 MHz, however the reason why this was chosen is unknown.

The Archives material also revealed the following for the day's operation of October 1, 1934. It states:

"On Monday, 1st October, following request from Super of Telegraph station VK7JB was again used with a departmental telegraphist, (Mr Haine) in attendance. Mr Batchler was standing by for making engineering adjustments."

This last comment is quite interesting in that it signifies that Jack did not do the operating on this day, but rather ensured that the equipment was working satisfactorily. Initial thoughts were that a departmental telegraphist, who made a living from listening to a sounder, would have great difficulty listening to Morse tones over the wireless, however, after further examination of archival material, and by talking to amateurs of that era, it seems many telegraphists did in fact attach a buzzer unit to their circuit rather than the standard sounder. Also, the PMG did have its own wireless service. Thus, one could assume many telegraphists would have also been proficient wireless

TELEPHONE NO. C-132.
SWITCH NO. 465.

COMMONWEALTH OF AUSTRALIA.
DOM/HDF.

IN REPLY PLEASE QUOTE

REF. 31/5175. POSTMASTER-GENERAL'S DEPARTMENT.

Telegraph Branch,

Ref. C/78-1/181.

MELBOURNE, C. 4th January, 1932.

MEMORANDUM.

Mr. R. Jones,
Telegraphist.

Interruption to Tasmanian cable working, December, 1931. Use of Radio as Auxiliary Service.

With reference to the above, the interruption to the Tasmanian Cables at the peak period of the year, and including the Christmas week, occasioned considerable apprehension and difficulty as to the disposal of the load.

Your service therefore in undertaking the transmission of surplus traffic by radio is very much appreciated, and I have to express the thanks of the Department for your valuable assistance. The technical knowledge and telegraphic skill, as well as the use of your plant, were of material assistance in the disposal of the public traffic handled and relieved the Department of much anxiety as to the safety of the business. I shall be glad to learn if you were involved in any out of pocket expenses in connection with the operation of your station on behalf of the Department.

Lawrence
NOT SUPERINTENDENT TELEGRAPHS.

Letter of appreciation from Mr Lawrence,
A/G Superintendent Telegraphs, 1932.



Jack VK7JB, and his station c 1930.

Mr J Batchler dies in Hobart

Mr Jack Copeland Batchler (68), well-known throughout the State in military, sporting, educational and wireless circles, died suddenly at his home in Willowdene Ave, Sandy Bay.

Son of the late John Alexander and Esther May Batchler, he was born in Hobart, and educated at the Lansdowne Crescent School and Hobart Technical College.

He first worked in the Tasmanian Railways, and before World War Two, joined the AMF, specialising in signals.

He served in the South-West Pacific, and was mentioned in despatches in Tarakan, with the occupation forces in Japan for two years, and later in Korea.

He reached the rank of major.

On his retirement from the Army, he joined the Tasmanian Education Department as an electronics officer in the Media Centre.

In his younger days, Mr Batchler played senior football with both Cananore and Lefroy, and he was a member of the winning Mercantile senior rowing eights in 1929-30.

He was a life member of the Wireless Institute of Australia, and participated in annual remembrance day competitions when Australian amateur radio enthusiasts sought to make contact with radio "hams" throughout the world.

Mr Batchler also was an associate member of the Institute of Radio Engineers of Australia, and a member of the Old Hobartians' Masonic Lodge.

He leaves a wife and daughter, Jennifer.

—From The Mercury May 26, 1979

VK3RJ

RECEIVED
VK3RJ
10 MAY 1932
TELETYPE
73 Ray
RAYE JONES

COMMONWEALTH OF AUSTRALIA.

TELEPHONE NO. Cent. 132
SWITCH NO. 465

IN REPLY PLEASE QUOTE

NO.

POSTMASTER-GENERAL'S DEPARTMENT.

Tele. Branch

MELBOURNE, C. 30th October, 1934

DKR/HDF
Ref. C/88-3/182

MEMORANDUM to

Mr. Ray Jones,
Telegraphist,
MELBOURNE

Interruption Tasmanian cable - utilisation
of radio

With reference to the recent breakdown in the Tasmanian cable, I have to express appreciation of the assistance given in maintaining communication by radio with Tasmania.

The ready and efficient manner in which you came to the assistance of the Branch materially conduced to the successful handling of the load.

Please accept the best thanks of this Branch for the assistance rendered.

Memorandum to Ray VK3RJ, from the
Superintendent Telegraphs for Ray's service
during the Cable Breakdown of 1934.

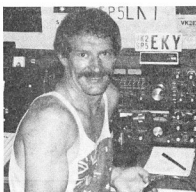
Lawrence
(C. Lawrence)
SUPERINTENDENT TELEGRAPHS

W.A.C. **VK7JB** W.B.E.

21 QUARRY ST. TASMANIA North Hobart
TO: *Conf* CONTINUING QSO OF AT: *CONF* EARLY
ON: 10:00 AM ON: 11:00 AM ON: 12:00 PM
TRANSMITTED BY: *CONF* IN: *CONF* FROM: *CONF* BY: *CONF*
RECEIVED: *CONF* VALUE: *CONF* NET: *CONF* 11:00 AM
REGISTRATION NO. *CONF* BY: *CONF* IN: *CONF* ON: *CONF* 11:00 AM
THE QSO WAS: *CONF* BY: *CONF* IN: *CONF* ON: *CONF* 11:00 AM

Jack Batchler VK7JB, c 1930.

NEW VK AMATEUR



Frank VK2EKY, in his VK shack.



On Niue Island.

I have been a radio amateur since 1971. My first call sign was SP5EKY. I was active with this call sign in Poland until December 1991, and I still retain the call.

I arrived in Australia in July 1985 and have been operational on the bands with VK2EKY since December 1985.

Prior to ceasing operation in Poland I was a member of the SPDX Club and had worked over 250 countries and had about 15 000 contacts — many of these were with VK amateurs. I have since worked many of these stations with the VK2EKY call sign and it has been a great surprise for them.

Now, as an active Australian station, I have made about 8000 QSO with over 200 countries. I love Australia and amateur radio. I have met many great Australians on the air and I was thrilled to win my section in the last VK/ZL/Oceania Contest — this was a first for me.

From April 18 to May 15, 1987, I operated from Niue Island as ZK2EKY (a DXpedition/holiday by myself) and worked 9000 stations, almost 200 countries, and 39 Zones (except 34), all-bands CW and SSB!

I am planning another DX trip to Manihiki Island (North Cook) probably with the same call sign. All QSLs for my call signs to VK2EKY, PO Box E450, Sydney, NSW, 2000.

I became a member of the WIA upon arriving in Australia and read AR magazine.

I have found amateur radio a great help in learning the English language.

—Contributed by Zbigniew (Zbig or Frank) Murdzia VK2EKY

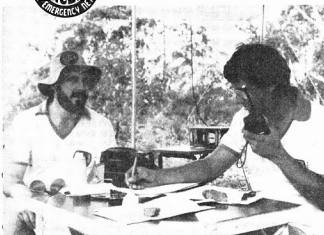
BUNGONIA (NSW) RESCUE 87

WICEN operators provided communications assistance during the Rescue Exercise, an annual Sydney based Cave Rescue Group event was held at Bungonia, on March 14, 1987.

—Contributed by Greg Baker



WICEN News



Jeff VK2BY, operating with Steve VK2DNN, observing.



Jim VK2BZD.

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Happy Birthday INTRUDER WATCH!

This year celebrates the 20th Anniversary of Intruder Watch.

Yes! 1987 is indeed the birthday (or anniversary if you like) of the founding of the Australian Intruder Watch.

In 1967, with Max Hull VK3ZS, in the WIA Federal President's chair, the Federal Council met, and the formation of the Intruder Watch was one of the results of that meeting.

WHY AN INTRUDER WATCH?

It was said at the above meeting that "Generally speaking, anyone may use any frequency until someone objects, (the 60-day rule). This means that intruders who use the amateur frequencies illegally may claim that they have the right to the frequencies because no one has objected..." and "...this is vital at the international level; unless amateurs can prove that they have objected to the presence of intruders on their bands, they have no case before an international tribunal..."

This premise still holds good today. So it is still vital that we have documented evidence of our objections to each new intruder.

David Wardlaw VK3ADW, was appointed as first Federal Co-ordinator, and initiated the formation of the State groups.

HOW DOES THE INTRUDER WATCH OPERATE?

The amateur or SWL hears what he suspects is intruder transmission on an amateur band. He makes a note, detailing frequency, time (UTC), mode, signal strength, date, and sends the report off to his Divisional Co-ordinator.

The Divisional Co-ordinator receives the reports and edits them. He is looking for spurious signals, receiver IW products, etc, and is trying to establish that the reported signal is, in fact, an intrusion.

Having done this, he sends his reports along to the Federal Co-ordinator, who does much the same thing. The reports are going through a kind of "filter process". When the Federal Co-ordinator is satisfied he has more or less a list of bona fide intruders, he collates them all into a monthly summary which is set out in ascending order of frequency. He also keeps records of all intruders reported, in order of frequency and alphabetically. By doing this, he can keep tabs on intruders, and see which ones are intruding on a regular basis, rather than wasting time on the signal which appears once only.

The Federal Co-ordinator files a copy of the summary, sends one to the Department of Communications, and forwards one to the International Amateur Radio Union Association Region 3 Monitoring System Co-ordinator. The IARU Region 3 Co-ordinator collates all National Society Intruder Watch summaries into a grand summary, which goes to:

1. The IARU Region 1 and 2 Monitoring System Co-ordinators, so they can compare activities of intruders
2. The Secretary of IARU Region 3, who sends copies to all member Amateur Radio Societies in Region 3 and
3. To the IARU Monitoring System International Co-ordinator. He has access, through the IARU Council, to the International Frequency Registration Board (IFRB).

So you can see that comparisons are made, world-wide, of intruder activity, and the respec-

tive Regional Co-ordinators look at the other summaries to see if any intrusions complained of are originating in their own region. The Intruder Watch is concerned with transmissions originating from Governmental, commercial and military sources. Central and Northern Europe and Asia figure prominently in the list of originating locations.

DOES THE SYSTEM WORK?

Yes. Successes have been documented ranging from the removal of Australian Defence Forces stations using obsolete transmitters and causing harmonic radiation; the removal of French Polynesian R/T services using the 40 metre band; the removal of Chinese RTTY stations; the removal of licensed amateurs working maritime mobile and passing commercial traffic on behalf of a commercial interest, and so on. However, every victory is hard-won, and requires hours and weeks and months of persistent monitoring and reporting by all concerned. So, if you report an intruder and you hear the same signal again next week or next month, don't think that nothing is being done. It is a very slow business, and is plagued by the demands of diplomacy and political considerations.

THE IW CERTIFICATE OF MERIT

Whilst not an amateur radio award in the true sense of the word, there is a *Certificate of Merit* available, issued annually to that person, amateur or SWL, in each WIA Division, who best demonstrates support for the Intruder Watch. These certificates are issued on a once-only basis, and are a small tangible token of thanks from the Intruder Watch to its supporters. 1985 saw the first of these issued.

WHAT'S HAPPENING ELSEWHERE?

The RSGB has its Intruder Watch; the DARCS has its Bandwatch; the ARRL has its AIRS (Amateur Interference Reporting System); New Zealand, Japan, Netherlands, Switzerland, and many other radio societies sponsor a similar system. Of course, what is heard in some of these places is not heard in others — that is why it is important to do comparison checks, and have the various co-ordinators exchange information.

MEET THE CO-ORDINATORS

FEDERAL CO-ORDINATOR — Bill Martin VK2COP. I was first licensed in 1980, as VK2PFH, after a brief period of SWLing. I then upgraded to VK2EBM, and changed to my present call in December 1984. The presence of intruder stations captured my attention from the outset of my interest in radio, and I was appointed VK2 Co-ordinator in May 1981. It seemed a natural progression to accept the Federal position in July 1982, when the position became vacant.

When the position of co-ordinator for the IARU Region 3 Monitoring System became vacant in February 1986, it seemed to be the only thing to do to undertake the job. I am a band-hopper, and keen award chaser. I have been a NSW State Police Officer for 27 years, and a part-time musician for 30 years, playing the clarinet and saxophone. I have also taught music for several years. I am also interested in gardening. In spite of its inherent frustrations, I

Bill Martin VK2COP
FEDERAL INTRUDER WATCH CO-ORDINATOR
33 Somerville Road, Hornsby Heights, NSW. 2077



Federal Intruder Watch Co-ordinator, Bill Martin VK2COP

am very happy to be involved in the Intruder Watch.

Alan Hawes VK1WX. Alan has been handling the ACT post since March 1986, as well as being heavily involved in other WIA matters. He has been licensed for seven years, and his main interest in the hobby is HF DXing and antennas. Alan is an electronics technician by occupation, and enjoys 10 pin bowling when he is away from the radio scene. He resides in Evatt, ACT.

Philip Pavey VK3BHN. Philip has recently joined us as Co-ordinator for the Victorian Division. He was first licensed in 1982 as VK3PMJ, and attained his present call sign in 1985. Philip is actively engaged in getting young people into amateur radio, and is currently Vice-President of the Frankston and Mornington Peninsula ARC. He manages to fit this all in whilst undergoing an apprenticeship with Telecom at Ballarat.

Gordon Loveday VK4KAL. Gordon has been on the air since first licensed as VK4ZBI in July 1957. He is a storage battery assembler by occupation and lives in the wilds of Rubylake, in central Queensland. Gordon enjoys homebrewing and rag-chewing on VHF/UHF. His other interests include listening to a fine collection of classical recordings. Although somewhat isolated geographically, this does not hinder his active participation in the Intruder Watch. Gordon has been involved in the IW since 1979.

Lindsay Collins VK5GZ. Lindsay was first on air as VK5NLC in September 1976. He is retired, and is a former 7th Division AIF Signals Radio

Operator. He is resident in Rosslyn Park, and enjoys experimenting with all types of antennas. His main interest is CW, and he was co-author of an article in AR on a programmable memory keyer, which he uses to great advantage. Lindsay was appointed IW Co-ordinator for VK5 in 1984.

Bruce Hunt VK6XZ. Bruce lives at Thornlie, and has been licensed for four years. His interests in the hobby include DXing on HF satellite communications and data transmissions. Bruce nominates computing as another hobby, which is not surprising, as his occupation is that of a Computer Systems Consultant. Bruce holds the view that emphasis should be placed on encouraging and educating our regular contributors, where needed, and an effort made to recruit more helpers for the IW.

Robin Harwood VK7RH. Robin was licensed on Christmas Eve 1971, and is a resident of Launceston, who is interested mainly in SWLing. You will no doubt have read Robin's monthly SWL column in AR. He is also active with the Australian Traffic Net, and enjoys reading, writing letters and music appreciation. He is retired and has been IW Co-ordinator since 1984. He is quick to say that the number of intruders is increasing, so we must urge more people to swell the ranks of intruder watches, to keep abreast of the problem.

Henry Andersson VK8HA. Henry lives in Stuart Park, about one kilometre from the business centre of Darwin. When I asked Henry his main interest in the hobby I realised I had made my first mistake... I should have asked him "Is there any aspect you are not interested in?" Morse lessons; the VK8 RTTY Broadcast; the Darwin AFC; the VK8 QSL Bureau; award-hunting; contesting; home-brewing... you name it, Henry does it! Also, like many of us, he is continually trying to exercise mastery over a computer. Henry has been the IW Co-ordinator

in VK8 since 1975, but had been involved long before that. Possibly he was the first VK8 to be involved in intruder watching. Henry has been licensed since 1945.

So, that is the crew who look after the co-ordination of reports around Australia. Many thanks for your efforts, fellas, and we can all thank them in the future by sending in reports of any intrusions we hear on the amateur bands of frequencies.

So, once again, **Happy Birthday Australian Intruder Watch**, and we look forward to continuing support from those who have assisted in the past; we look for their support in the future, as well as the support of those who have yet to lend a hand. Remember — the intruder problem is a continuing problem.

WIA INTRUDER WATCH CO-ORDINATORS PAST AND PRESENT

FEDERAL	
1967-1971	David Wardlaw VK3ADW
1971-1980	Alf Chandler VK3LC assisted by Ivor Stafford VK3XB
1980-1981	Graeme Fuller VK3XNI
1981	Bob McKernan VK4LG
1982-1987	Bill Martin VK2EBM/VK2COP
VK1	
1974-1978	Ted Pearce VK1AOP
-1984	Fred Robertson-Mudie VK1MM
1984	Grahame Parsons VK1GP
1985	Ray Roche VK1ZJR
1986-1987	Alan Hawes VK1WX
VK2	
1970-1974	Bill Jenvey VK2ZO
1974-1977	Les Weldon VK2AFG
1981-1987	Bill Martin VK2COP
VK3	
1968-1969	Morton Davis VK3ANG
1969-1971	Alf Chandler VK3LC

1971-1975
1975-1981
1981
1982
1983-1986
1986
1987

Albert Cash SWL
Ivor Stafford VK3XB
R J Hose VK3KAH
Frank Gardiner VK3VAV
Steve Phillips VK3JY
Bill Wilson VK3DXE
Philip Pavey VK3BHN

VK4
1970-1979
1979-1987

Murray McGregor VK4KX
Gordon Loveday VK4KAL

VK5
1971-1972
1972-1982
1982-1984
1984-1987

Bill Franz VK5FR
Leith Cotten VK5LG
Colin Ralph VK5GGR
Lindsay Collins VK5GZ

VK6
1973-1975
1976
1976-1982
1982-1983
1983-1987

Ross Greenaway VK6DA
Albert Cash SWL
David Couch VK6WT
John Farnell VK6ZJF/NBP
Bruce Hunt VK6XZ

VK7
1971-1972
1972
1981
1982-1983
1984-1987

Ian Pearson VK7KB
Max Ives VK7MX
Frank Beech VK7BC
Jim Davis VK7OW
Robin Harwood VK7RH

VK8
1975-1987

Henry Andersson VK8HA

So, these people have started, and kept the Intruder Watch going in Australia, for 20 years, and are to be congratulated, along with hundreds of amateurs and SWLs who are the people who hear the intruders in the first place, and without whom the Intruder Watch could not function. Let us hope that they, or people like them, can do the job for a further 20 years, because if we are unfortunately, always be necessary to keep watch on our frequencies.

Happy Birthday, Intruder Watch!

Wireless Video Transmitter Standard

Recently a number of electronic devices have been marketed in Australia intended to distribute within the home, television programs from VCRs, etc. Most of these devices have proved to have high signal output and have the potential to cause interference to other services at VHF and UHF. The WIA has pressed DCC for action to restrict the sale of such devices and to minimise the possibility of interference by the issue of an appropriate performance standard which would then enable action to be taken under the Radiocommunications Act.

Following is a recent DCC Press Release detailing steps being taken in respect to these devices, referred to as Wireless Video Transmitters. This was accompanied by a draft standard which should reduce their adverse effects on normal television reception and on other nearby services such as amateur.

- The Standard:
- Limits operation to the UHF Television Band.
- Limits radiated field strength to 76 dB μ V/m at a distance of three metres.
- Sets limits on bandwidth and spurious emissions.
- Requires the equipment to be capable of operation over a minimum frequency range of 70 MHz.

Where a wireless video transmitter does not comply with this Standard, (after proclamation) its importation and/or sale may be prohibited under the Radiocommunications Act.

We propose to advise the Minister that it is noted that operation of wireless video trans-

mitters may occur in the band, 576-585 MHz, which is also allocated to the Amateur Service under footnote AU30 to the Australian Table of Frequency Allocations. The field strength limit of 76 dB μ V/m at three metres, as proposed in the draft standard is insufficient to obviate interference to amateur services in all circumstances and it is assumed that DCC assistance will be provided where necessary to any amateur suffering harmful interference. This could include the identification of an interference source and adjustment of frequency where other direct approaches have failed to resolve a problem. Detailed procedures would, no doubt, be negotiable through the normal WIA/DCC co-ordinating meetings.

Allan Foxcroft
Federal Standards Co-ordinator

WIRELESS VIDEO TRANSMITTER STANDARD RELEASED

A draft standard, which aims to protect television reception against possible interference from wireless video transmitters, was released for public comment yesterday (May 20, 1987), by the Department of Communications.

A spokesperson for the Department said the need to protect television reception against improper use of these devices meant a standard had to be introduced as quickly as possible.

(Video transmitters provide 'wire free' connection between video recorders and television receivers. The radio signals from the transmitters allow video recorders to operate some distance from one or a number of television receivers).

"Any video transmitter connected to a power supply can cause interference to television and other types of radiocommunications receivers operating nearby," the spokesperson said.

"In the case of a video transmitter with an excessive power level, the 'wire free' link between a video recorder and a television receiver could be up to 100 metres.

Such signals could interfere with a neighbour's television reception, particularly where video transmitters are operated in blocks of flats or other high density housing," the spokesperson said.

The standard would specify the performance and effective range for video transmitters. Details of the standard, in its draft form, would be available from the Department to suppliers, users and interested members of the public.

Once the standard came into force, the Department became aware of the use of video transmitters, either through complaints of interference or the transmission of anti-social material, the user could be subject to prosecution under the relevant provisions of the Radiocommunications Act 1982. In these circumstances, the video transmitter could also be confiscated.

The spokesperson said video transmitters imported or made in Australia after the standard came into force would have to comply with its requirements.

Copies of the draft standard may be obtained by writing to the Assistant Secretary, Operations Branch, Department of Communications, Canberra, or by ringing (062) 48 3800.

May 21, 1987

VISIT TO CHINA

Wally Watkins VK4DO
Box 941, Aitkenvale, Qld. 4814

From left: Wang Xun, Qin Du Xun (Secretary-General), Wally VK4DO, Dorothy (wife of VK4DO), Huang Yongliang and Tong.



During a two week stay in Beijing I was able to operate BY1PK, on May 5, 1987. Stations worked were 4S7EA, UL7NW, VK2CBL, VK2KAE/B (Cocos) and VK3SF.

Meaningful discussions took place with the Secretary-General Qin Du Xun, Wang Xun and Huang Yongliang, regarding WIA assistance with amateur radio in China.

At that date, there were 17 stations in China, with three new ones to start within three months. One of these, BY1CKJ, in the Chongwenmen district of SE Beijing was visited. It came on air on June 1. The operator, Zhang, is very keen to work Australian stations. (More about this in a later article). Our CRSA friends escorted my wife, Dorothy, and I, to several places of interest in Beijing, including Radio Beijing studios and the Summer Palace.

BY1PK is situated at the south-east corner of the Tian Tan (Temple of Heaven) complex, access being from the road on the east of this park.

The station is located on the top floor of a building complex with a magnificent antenna farm just above. They have a triband beam for 14, 21 and 28 MHz; a caged dipole for 7 MHz; Yagis for the satellites; five elements on six-metres; plus antennas for 30, 80 and 160 metres.

Amateurs visiting Beijing are most welcome to visit the station and also operate it. Arrangements should be made well in advance before leaving Australia. A telephone call to the Secretary, Huang, when in Beijing is all that is then necessary to receive a warm welcome.

Dorothy and I were feted at a special banquet as guests of Qin Du Xun and our other CRSA friends.



Wally VK4DO, operates BY1PK.



QSP

PRECISE CLOCK

REMEMBER THE THRILL of owning your first digital watch, knowing it would keep the correct time within a minute a month and not require winding? Now there is a super-high-tech clock that keeps time within one second over 150 000 years. If you are one of the first 150 to order — at over US\$20 000 each — you may be able to get delivery by the end of this century.

It may be just as well to wait. This new solar-powered clock picks up standard time signal broadcasts from West Germany's Physical-

Technical Institute in Braunschweig. Unless you live within 1200 miles (1900 km) of the transmitter in Mainflingen, near Frankfurt, you may have to wait for similar signals to be available by satellite. The accuracy of the clock comes from the accuracy of the cesium-beam atomic clock at the Institute, and from a microprocessor that makes the clock so smart you will never have to set or reset it, even when you "spring forward" or "fall back" for Daylight Savings Time.

The face of the clock is a bank of solar cells — enough to both power the clock and to store enough charge to keep it running when the sun

isn't out. If the solar angle harks back to sundials, remember, they weren't much good at night.

The company behind this new clock — the 125-year-old Junghans Uhren GmbH — thinks it can someday build a wristwatch based on the same principles. And they think they may be able to reduce the price.

Let us hope so. For about the same money you could buy a cheap LCD watch every day until the turn of the century. It may not be as accurate, but at least you could use it on this side of the world!

—Adapted from Gernsback's Outlook, February 1987

FUTURE OF AMATEUR RADIO

Ron Henderson VK1RH

171 Kingsford Smith Drive, Melba, ACT. 2615

The April 1987 issue of this magazine contained an article about the future of amateur radio. It was forwarded as an agenda item for the recent 1987 Federal Convention where input came from all Divisions. Incidentally, one member wrote to Executive through his Federal Councillor with his views on the topic.

The ACT Division aired the topic at a Divisional meeting to determine members views. NSW held a forum, sadly, less than 10 members attended. Queensland circulated their clubs and presented a well considered paper which is part of the Convention minutes. South Australia discussed the topic at a conference of clubs and the West Australian Division's presentation to the Convention was based upon a report to their council. In summary all Divisions considered and spoke on the matter. The minute secretary took down the key points from this discussion and later read back a combined statement to ensure it conveyed the feeling and intent of the Federal Council. Those points included:

Age profiles of potential members
Component supplies
Recruitment
Entry points to amateur radio service
Amateur examinations
Practical experience
Equipment complexity
Helping others
Syllabus changes
Advanced class licence
Common band
Courses
Public relations
Administration
Regulations

The key points with supporting arguments become the Guidelines to the Executive for the Future of Amateur Radio. They were adopted unanimously by the Federal Council. The Guidelines appear below. Members are invited to comment on these Guidelines, desirably through their Federal Councillors as they will form the basis of the WIA's attitude to the future of our service.

87.09.17
APPENDIX G

FUTURE OF AMATEUR RADIO GUIDELINES TO EXECUTIVE

1 Presentations and discussions at the 1987 Federal Convention have given rise to the following guidelines to the Executive.

Age Profiles

2 It is necessary to tap all age groups, sowing the seeds of amateur radio in the young through schools, JOTA and like means.
3 The target age group is the 40s to 60s where family commitments have eased, more disposable income is available and a new hobby or interest is being sought.

4 Senior citizens and retired persons should not be neglected when seeking new members.

Component Supplies

5 The difficulty in obtaining components for home construction has been identified as a potential field for WIA involvement.

Recruitment

6 It is necessary to exploit advantages; eg the sun spot cycle increase and two metre novice privileges. Commercial pressures are not a great influence on recruiting because of the small sales volume possible.

7 We must identify what we can offer and promote it, using all available advertising means, paid and unpaid, visual, aural and print media.

8 Two fields worthy of exploiting are digital electronics and the CB community, especially UHF CB. Liaison and news broadcasts, bulletin board items are obvious first actions.

Entry Points

9 A range of entry points must be offered to accommodate differing technical levels, Morse skills and desired operating modes. A "mix and match" examination system, both with and without Morse based upon one, regulations, and two, levels of complexity for theory and Morse, will accommodate most needs. Clear power levels and operating privileges must be associated with each level. There is a case for a Morse-less novice VHF licence. These proposals generally mirror the Racewell model (AR, Aug 1986).

10 We should provide the opportunity for data modes within the licence structure.

11 An easier entry to novice as the minimum standard is recommended.

12 Considerations should be given to a student or supervised operating permit or other authority as a prelude to the novice examination.

Examinations

13 A system based upon one regulations examination, plus two levels of complexity for theory and Morse will satisfy our needs.

14 The novice examination is a basic "entry to the hobby" test of skills. Marking must not be based upon admitting a fixed percentage of applicants, rather everyone who meets the basic required skills should pass.

15 It has been observed novice examination pass standards have crept up over the years since the introduction of the licence and should be restored to the earlier levels.

16 Regardless of the above novice entry test must remain an achievement calling for a degree of study and preparation.

Practical Experience

17 Practical experience is highly desirable, yet little if any is given in most amateur radio licence courses. The student permit mooted above could be a means of enhancing this neglected aspect.

18 True amateur experimentation is still alive, although it principally applies to areas outside the transceiver proper; ie antennas, accessories, peripherals, modems, computers and the like.

Equipment Complexity

19 Amateur equipment is becoming more complex and capable, fortunately increased reliability has accompanied those changes and nowadays amateur is rarely required to open his "black box." This rise in complexity is in keeping with changes in our technology influenced electronic age.

20 Amateur radio as a consequence has lost its impact magic and excitement hence new avenues and applications must be found to retain interest.

21 Computers are the current fad but are rapidly being integrated into amateur radio as peripherals rather than remaining in a stand-alone state.

22 Digital signal processing using VLSI is following upon the heels of digital data handling by computer, it offers new prospects for amateur radio.

Helping Others

23 The "Elmer" approach of the USA is not well understood in Australia, perhaps because their novice examination is amateur administered. Teaching in mass has become the educational norm and this is a further contributing factor.

24 The Australian amateur, whilst able to communicate over the air, is seen as remote or impersonal in face-to-face situations. Encouragement of the Elmer or elder-pupil approach, call it what you will, must enhance the personal image of the amateur.

Syllabus Changes

25 Some attention to examination syllabuses is needed. The early novice level must be restored and question banks purified and expanded to permit public release.

Advanced Licence Class

26 The method of determining how to qualify for an advanced class licence raises problems. Demonstrated experience may be a means however the issue raises more problems than it solves and has been rejected as a retrograde step.

Common Band

27 There is much supporting argument for a common band and the case made is for 144-148 MHz FM voice. 50-54 MHz is rejected because of band usage constraints. The 420 MHz band, whilst favoured by some does not facilitate a high common band occupancy.

Courses

28 The rising novice examination standards have led to courses of excessive duration. Also, these courses are generally without practical experience content. A course length tailored to the school term, semester, or even the winter season, followed immediately by the examination, has much to commend it.

Public Relations

29 Amateur radio presently has a low profile with some antagonism evidenced, especially at local government level. Planning permission is a key problem area to be worked upon.

30 It is essential to remove the technical awe from our public image. Amateurs must project an improved image in face-to-face situations.

Administration

31 Whilst administrative matters will generally be dealt with separately in the review of the corporate structure of the WIA, two major issues are highlighted here. Firstly, we need better representation to and from the amateur body. Secondly, we must employ all the skills we possess in that amateur body and break down the face-to-face barriers.

Regulations

32 The requirement is for enough standards to achieve ordered conduct.

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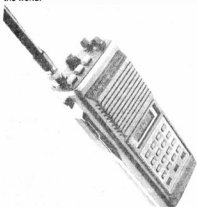
Know your Second-hand Equipment

Ron Fisher VK3OM

3 Fairview Avenue, Glen Waverley, Vic. 3150

KENWOOD VHF EQUIPMENT continued

Continuing on from last month, we will look at a few more of the early Kenwood pieces of VHF equipment. It is interesting to note that the *Trio* has now disappeared, except in the UK where the Kenwood name has never been used. However, I have heard that the UK will soon change from Trio to Kenwood and so come into line with the rest of the world.



KENWOOD TR-2400 TWO-METRE FM HAND-HELD TRANSCEIVER

This was the first two-metre hand-held produced by Kenwood and for the time was a very advanced transceiver. Released in 1979, at a price of \$345, it featured a LCD frequency readout, keyboard frequency entry and 10 programmable memories.

A memory scan facility could be programmed to stop on either a busy or open channel. Memory backup was provided from the included nicad battery pack. There was one small problem with the 2400, as the drain of the memory circuit, although small, would flatten the battery after a few weeks of non-use. It was therefore necessary to ensure that the battery was placed on the charger every three weeks or so, even if it had not been used.

Somewhat larger than the hand-holds we are used to seeing today, but in most respects they were able to keep up in performance and features. Dimensions are 71 x 192 x 47 mm (WHD), weight was 740 grams. Transmitter power output rated at 1.5 watts with no low power option. They were normally supplied with a nicad battery pack and flexi-antenna. An AC operated base battery charger was available as an option, but a normal wall plug charger was supplied. Secondhand value today would be about \$200.



KENWOOD TS-600/TS-700 TRANSCEIVERS

These were six and two metre, full-featured SSB, FM, CW and AM rigs, complete with in-built AC power supply. The two-metre band was tuned in four 1 MHz segments. In addition to the normal VFO tuning systems there was provision for 11 crystal controlled frequencies. With the four 'bands' this gave 44 fixed channels, but they were in the same relative place on each band.

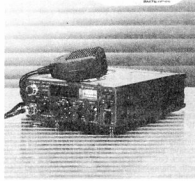
Few amateurs took advantage of this facility with most relying on the VFO. On-air performance was quite good with excellent quality on both FM and SSB. AM receive quality was poor however, due to the lack of a suitable bandwidth; the SSB filter was used for AM reception.

Transmitter power output power was about 10 watts. The TS-700, two-metre version, was reviewed in the March 1977 issue of AR. Price at this time was \$575. Secondhand value today would be about \$350.

The TS-600 was the six-metre version and was identical in all respects except the frequency coverage. This was from 50 to 54 MHz, again in four bands. Price both new and secondhand would be the same as the TS-700.

The TS-700 was superseded with the TS-700SP. This was upgraded to include a digital frequency readout, a receiver preamplifier and also provision for an optional external VFO.

Apparently not many of these were sold in Australia, however, if you happen to come across one I would assume the secondhand value to be about \$425.



KENWOOD TR-7600/TR7625 TWO- METRE FM TRANSCEIVERS

These models were updated versions of the TR-7400 previously reviewed in this column.

The 7600 is the 10 watt output version whilst the 7625 is the 25 watt output model. Frequency selection was similar to the earlier 7400 but with the 100 and 10 kHz selector knobs now ganged and the 5 kHz point selected by a push button.

A four segment digital display indicated the operating frequency. A new feature was a memory — yes, one only — but at least an indication that we were on the way to bigger and better things. However, as an option, the micro-processor controlled RM-76 could be plugged in to do all sorts of

wonderful things. This unit contained its own digital readout and had six memory channels plus scanning of the whole two-metre band or the six memory channels. Both the TR-7600/7625 and the RM-76 are rather rare items. When released in 1978, the 25 watt version sold for \$450, but I cannot find a price on the remote control unit.

Secondhand value today would be about \$300. If you find one with an RM-76 attached you might pay another \$25. Most of these early Kenwood two-metre rigs had excellent performance and reliability characteristics and are therefore recommended at the right price.

RADIOSES CHEWING THE RAG

Hello — CQ, CQ, CQ,
Station here is VK2.

The band sounds very good to me,
I hope that someone will agree —
And quickly send an answer through.

Hello — hello there VK2,
Here's a pal 'tis very true,
Its good to hear you on again,
Your signal's strong, your speech is plain,
So now — how copy VK2?

Oh — splendid, Pal, as I'm alive
I hear you perfectly Q five,
And as our contacts have been few,
Let's settle down the rag to chew.
For RCC we now can strive.

Hey — VK2. Hey VK2!
I want a quick report from you.
I'm working for DXCC.
Your QSL is good for me.
So now, how copy VK2?

I'm sorry pal, we had a breaker.
True, I swear it by my maker.
Not a word of yours came through,
Though ears were strained by VK2.
We also had some QS-Baker.

So let us now go QSY,
Another frequency to try.
If our position this we vary
We may escape the QR-Mary.
I'll meet you by and by.

Vee Kay Two — Oh — Vee Kay Two,
I say good eefenings to you.
I haif not heard you on before.
Ziss may my contacts list von more.
Giff QSL from you.


Hello, Hello, Pal; where are you?
Here again is VK2.
I hope conditions have not changed,
I've lost you, though the band I've ranged,
And I long the rag to chew.

VK2, now here's your Pal,
And I can tell you — name is Hal.
CQ, CQ, CQ, CQ —
C/Q, CEE QI, CEE KEW!
— And everything is normal.

Oh Hal, Oh Hal, my spirits sag,
My thoughts to bed I'll have to drag.
It's ORT I now must go.
To beat the QR-Mexico —
And I did want to chew the rag.

— "Hamband" (Originally printed in the Nigerian ARS
Newsletter 1970s)

Coaxial Cable Specials


Description	Trade & U.L. Type Number	AWG (Stranding) Dia. in/in Nom. D.C.R.	Insulation & Nominal Core O.D.		No. of Shields & Material Nom. D.C.R.	Nom. Imp. Ω	Nom. Vel. of Prop.	Nominal Capacitance		Nominal Attenuation			
			Inch	mm				pF/ft.	pF/m	MHz	dB/100 ft.	dB/100 m	
	9913 80C	9% (Solid) .108 bare copper .900 Ω /M' 2.95 Ω /km	Semi-solid Poly-ethylene	285	7.24	Duobond III* + 88% tinned copper braid 1.8 Ω /M' 6.0 Ω /km 100% shield coverage	50	84%	24	78.7	50	0.9	3.0
											100	1.4	4.6
											200	1.8	5.9
											400	2.6	8.5
											700	3.6	11.8
											900	4.2	13.8
											1000	4.5	14.8
											4000	11.0	36.1

Black PVC jacket.

BELDEN 9913 low-loss VHF/UHF coaxial cable is designed to fill the gap between RG-8 to RG-213 coaxial cables and half-inch semi-rigid coaxial cable. Although it has the same O.D. as RG8/U coaxial, it has substantially lower loss, therefore providing a low-cost alternative to hard-line coaxial cable. Your special price from ACME Electronics is only \$4.84 per metre.

BELDEN Broadcast Cable RG-213/U MIL-C-17D is only \$5.23 per metre, or BELDEN 22385 YR Commercial Version RG213, the same specification as 8267, for only \$2.14 per metre. *Prices do not include Sales Tax.

For more information about the above, or any other BELDEN cable, simply contact our resident amateur radio operator, Colin Middleton (VK3LO) or our sales department.

Description	Trade & U.L. Type Number	AWG (Stranding) Dia. in/in Nom. D.C.R.	Insulation & Nominal Core O.D. Inch mm	No. of Shields & Material Nom. D.C.R.	Nom. Imp. Ω	Nom. Vel. of Prop.	Nominal Capacitance pF/ft. pF/m	Nominal Attenuation MHz db/100 ft. db/100 m	
	8267 1/4 1354 60C	13 (7x21) .089 bare copper 1.87 Ω /M' 6.1 Ω /km	Poly-ethylene .285 7.24	Bare copper 1.2 Ω /M' 3.9 Ω /km 97% shield coverage	50	66%	30.8	101.0	50 1.6 5.2
									100 2.2 7.2 200 3.2 10.5 400 4.7 15.4 700 6.9 22.6 900 8.0 26.3 1000 8.9 29.2 4000 21.5 70.5

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VHF UHF

— an expanding world

Eric Jamieson VKSLP
1 Quinns Road, Forreston, SA. 5233

All times are Universal Co-ordinated Time and indicated as UTC

AMATEUR BANDS BEACONS

FREQUENCY	CALL SIGN	LOCATION
50.010	JAZJIG	Mie (Near Nagoya)
50.075	VSSSIX	Hong Kong
50.090	KHGEQI	Honolulu
52.013	P26BPL	Lobolaba Island
52.020	FEABIS	Noumea
52.100	2KZSIX	Niue
52.200	VKRVF	Darwin
52.250	2LZVHM	Manawatu
52.320	VKSHMF	Honolulu
52.330	VKGRIT	Newcastle
52.325	VKZRVH	Newcastle
52.345	VKAAEP	Longreach
52.350	VKGRTO	Kalgoorlie
52.370	VK7HST	Hobart
52.418	VKQMA	Moscow*
52.420	VKZRSY	Sydney
52.425	VKZRGB	Gunnedah
52.435	VK3RMV	Hamilton
52.440	VK4RTL	Townsville
52.450	VKSVF	Mount Lofly
52.455	VK6RPH	Albany
52.465	VK5RTW	Perth
52.470	VK7RNT	Launceston
52.485	VK8RAS	Alice Springs
52.490	VK8RIS	Russellton
52.495	VK4RTI	Mount Mowbray
52.500	VK1RCC	Canberra
52.510	VKZRSY	Sydney
52.520	VK3RTG	Glen Waverley
52.530	VK5RTW	Albany
52.540	VK7RMC	Launceston
52.550	VK8RVF	Darwin
52.560	VK8RAS	Alice Springs
52.570	VK8RSE	Mount Gambier
52.580	VK6RPH	Port Hedland
52.590	VK8RTI	Warrnambool
52.600	VKSVF	Mount Lofly
52.610	VK2RCW	Sydney
52.620	VK6RPH	Perth
52.630	VK6RIS	Russellton
52.640	VK6RPH	Newlands
52.650	VK6RPH	Wickham
52.660	VK2RSY	Sydney
52.670	VK4RBB	Brisbane
52.680	VK4RHK	Cairns
52.690	VK4RTL	Townsville*
52.700	VK3RAI	MacLeod
52.710	VK3RMB	Mount Buninyong
52.720	VK4RAR	Rockhampton
52.730	VK6RIS	Russellton
52.740	VK6RIS	Sydney
52.750	VK6RIS	Norfolk
52.760	VK6RIS	Rockhampton
52.770	VK6RIS	Rockhampton
52.780	VK6RIS	Rockhampton
52.790	VK6RIS	Rockhampton
52.800	VK6RIS	Rockhampton
52.810	VK6RIS	Rockhampton
52.820	VK6RIS	Rockhampton
52.830	VK6RIS	Rockhampton
52.840	VK6RIS	Rockhampton
52.850	VK6RIS	Rockhampton
52.860	VK6RIS	Rockhampton
52.870	VK6RIS	Rockhampton
52.880	VK6RIS	Rockhampton
52.890	VK6RIS	Rockhampton
52.900	VK6RIS	Rockhampton
52.910	VK6RIS	Rockhampton
52.920	VK6RIS	Rockhampton
52.930	VK6RIS	Rockhampton
52.940	VK6RIS	Rockhampton
52.950	VK6RIS	Rockhampton
52.960	VK6RIS	Rockhampton
52.970	VK6RIS	Rockhampton
52.980	VK6RIS	Rockhampton
52.990	VK6RIS	Rockhampton
53.000	VK6RIS	Rockhampton

1. A note from JA1VOK, advises KHGEQI has now shifted to 50.090 from 50.080 MHz, since our autumn months; also, that JD1YAA, being listed on 50.110, has ceased operation.

2. Mark VKQAO, advises the present frequency of VKQMA is 52.418. He has problems stabilising the frequency, which is only a very slight drift, due to the excessively cold conditions in the unheated building in which it operates. With an outside temperature of around minus 25 degrees Celsius at the moment, one can understand there could be problems!

3 and 4. Note that these two beacons are on the same frequency! Please take note of the next paragraph.

BEACONS AND FREQUENCIES

For years I have been trying to establish the accuracy of the beacon list and have repeatedly implored beacon custodians to advise me of the status of their beacons, frequencies and any changes attached to the various beacons under their control. These requests, in most cases, have been ignored, so inevitably we find beacons listed which are no longer operating. My beacon list is published in many other publications, and mostly without acknowledgment, I might add, and, as a result, the errors are then compounded, particu-

larly where the list is further lifted out into additional magazines, etc.

Eventually, the inevitable had to happen. We now have two 70 cm beacons in close proximity on the same frequency! VK4RIK, in Cairns, and VK4RTL, in Townsville, both on 432.445 MHz. A letter from Roger VK4CD, of the Townsville Amateur Radio Club arrived this month which says, in part, "VK4RTL has been operating in Townsville for some years on 432.445 MHz and approval has also been given by DOC and the WIA for a two metre beacon on 144.445 MHz. In fact, our VK4RTL licence shows this endorsement." I certainly never knew the beacon was operating, otherwise it would have been listed, and I can only presume the Cairns people also did not know when requesting permission to erect a beacon.

The letter also says on "I am surprised that the WIA Beacon Co-ordinator has not provided you with these details following a survey done of beacons last year. In the interests of harmony among VHF and UHF amateurs, I hope that the co-ordinator can sort out the mess that has been created by the allocation of similar frequencies." Certainly someone has erred in this case, either the Beacon Co-ordinator or DOC or both. I have replied to Roger VK4CD, suggesting dialogue be commenced between the Townsville and Cairns groups, with the intention of amicably resolving the matter.

Nevertheless, Roger enclosed a copy of a report on Australian beacons issued in March 1986, by Tim Mills VK2ZTM, the FTAC Beacon Co-ordinator (a copy of which I also received from Tim at the time), but as this contained so many errors, I did not use it as a basis for any adjustment to my listings; eg VK3RMB, at Ballarat, is shown as operating on 432.425, 432.451 and 432.535 MHz! That is only one set of errors. It is apparent the list is showing beacons for which permission has been granted to erect, but which, in fact, are not operating, but the list does not say this. I can only assume the FTAC Co-ordinator has not been supplied with the appropriate information in the same way as I have been treated over the years.

TO ALL BEACON CO-ORDINATORS

Now that a major problem has surfaced, let this be a lesson to everyone as to how bungling can be experienced largely due to inadequate communication from the various groups around the country. I have played my part for many years in giving your beacons adequate monthly publicity with updates as I find them, and I know of no other publication which has continuous listings of beacons. May I once again implore the various Beacon Co-ordinators around the country to sit down for 10 minutes (and that is all it would take) and set out details of your beacons which are operating, their frequencies, power, mode, call put, antenna and location. For reference, you could enclose information on proposed beacons not yet operating. Send a copy of this report to the FTAC Beacon Co-ordinator at PO Box 300, Caulfield South, Vic. 3162, and a copy to me for my listings. That is all we are asking you to do, but do it! And, please be prepared to advise any change of status which may frequently occur. This request is directed to all co-ordinators; those whose beacons are listed correctly are please asked to confirm that this is so, thus we will then, at last, have some accurate listings.

I would like to have this information on my desk no later than October 1987. After that date I will try and establish the frequencies, power, mode, call put, antenna and location. For reference, you could enclose information on proposed beacons not yet operating. Send a copy of this report to the FTAC Beacon Co-ordinator at PO Box 300, Caulfield South, Vic. 3162, and a copy to me for my listings. That is all we are asking you to do, but do it! And, please be prepared to advise any change of status which may frequently occur. This request is directed to all co-ordinators; those whose beacons are listed correctly are please asked to confirm that this is so, thus we will then, at last, have some accurate listings.

After that trade, it seems appropriate to move on to other matters.

Incidentally, a letter from Steve VK4KHQ, indicates he has built a six metre keyer for use as a beacon from Mount Isa, and after using it for 23 days in May, he got his first contact through its use by working Mick VK5ZDR, on 4/5 at 0455. Signals were 5x9 with GSB. It consists of a 10 WPM CW device, generated by a RS800C colour colour driving an external relay on the FT707 keying circuit. This leads an FTV707 transmitter which gives about 10 watts into a halfwave dipole at about eight metres above ground (370 metres above sea level). The keyer runs at 78 percent duty cycle with an 85 second CW message and 25 second receive break.

Steve asked whether the keyer should operate on 52.050, but I advised against this but made some other suggestions. I will await further information from him before listing the keyer in the beacon list.

SIX METRES

Planned to receive a number of upgrades for the Six Metre Standings Table and the current listings with corrections to shown elsewhere.

Barry VK2KAY, at Gunnedah, said he worked most of the stations on his list using 10 watts, but recently increased power to 80 watts. Present line up to a five element Yagi is a TS660 to an FT680R and HL6B6 amplifier. Previously it had been a home-brew transmitter.

Barry has been unable to obtain QSLs from ZM80Y and A35GW. For the former the address I gave in AR sometime ago resulted in confirmation of my contact, but I know there have been many problems with A35GW. Some have got their QSLs, many others are still trying. If anyone is able to help under present conditions please let me know.

Hatsuo Yoshida JA1VOK, advises he has worked a new DX country (number 67) on June 5, being BVDAE, on 50.010 MHz (BV transmission) and 50.110 MHz (JA1VOK answer). This was a special BV expedition to Taipei, on Taiwan by JA1UT. The team worked 110 JAs on 5/6.

David VK2BA, in upgrading his six metre standings advises a pleasant time spent with Gary WBXJ and his wife Janet, when they visited Sydney briefly on March 20. They showed the couple the sights of Sydney during the day, and in the evening joined the VK2BA for a barbecue at the VK2BA house. He said there was plenty of VHF talk and QSL card inspections!

NEWS FROM SOUTH AFRICA

An interesting letter has come from Hal Lund ZS6WB, and the following extracts are taken from it for your reading.

"I ran across your report on VK Sporadic E propagation in the VHF column of June 1986 OST. As this is a mode of propagation in which I am particularly interested, I thought perhaps we should compare notes as our E seasons and conditions should be quite similar.

"We have a tremendous problem in getting meaningful data in this country due to the limited VHF amateur population and the size of the country. The bulk of the VHF operators are in the major cities; Johannesburg, Pretoria, Cape Town, Durban, Port Elizabeth and East London. The short distances between many of these centres make openings very rare indeed.

"During the past E season, we had only one very good opening into Port Elizabeth and later Cape Town. The opening lasted over two hours and only five ZSs, one ZS2 and two ZS1s took part. Other than that, I have heard reports of only two other brief openings this season, one ZS1-ZS6 and the other ZS1-ZS5. I am sure there have been other openings to uninhabited areas, but obviously there have been no reports.

"Along the western coast there is virtually no

VHF activity except for two metre repeater operations in isolated places, like Windhoek. Six metres out there is completely deserted at the moment.

"I plan to install a six metre beacon system, near Pretoria, in the next six months which will have four antennas, one horizontal omnidirectional (halo) and three Yagis beaming to Europe, Australia and the US. Tentative plans are for CW keying and the omni-antenna to transmit the first two minutes of each five minute period followed by one minute periods on each of the three Yagis. Power should be in the region of 75 watts input. I am trying to get some antennas donated from one of the US manufacturers for the project and am hoping for three to six elements on each Yagi.

"At the same time and with the co-operation of one of the local radio clubs, we plan to install 12-15 low power beacons in ES research. These will be placed mainly in the areas where there is currently no six metre activity and will use omni-directional antennas.

"I would appreciate any information I could get from your end regarding your chain of beacons, especially regarding power output and whether directional antennas are being used. It would be very helpful to us here in determining which beacon frequencies would produce the best signals in this direction when F2 opens up.

"I would also be interested in contacting one or more keen six metre operators in the area of Perth who would monitor for the June/July throughout the coming ES season. The distance involved is very small to US/Europe and there have been several contacts made via Es over the past couple of years on that path. As the beacon will be situated well away from my home station, I will be able to monitor a fixed frequency for any calls from VK with an automatic alerting signal here at work. It normally takes me six minutes from home to work, but I have to make it back home in less than a half minutes when alerted of a six metre opening.

"VHF activity has dropped to virtually nothing in the past several years, the decline mainly caused by repeaters. I would guess this problem is almost universal. Although a lot of good multi-mode VHF equipment is floating around, very few go to the trouble to get a good antenna. I think there would be many of the ones that get properly installed are vertically polarised for use on distant repeaters. A number of the operators here are equipped for satellite operation, but very seldom use the equipment for other contacts. I have been trying to stir up some activity and over the past several months I have been publishing a VHF newsletter that now goes to about 130 SSB amateurs.

I had never given thought to the distances in South Africa, but on looking at my atlas I see it is about 1300 km from Cape Town to Johannesburg and another 50 km further to Pretoria, these being the longest distances between populated VHF areas and approximately the distance between Adelaide and Perth, Melbourne or Melbourne to Toowoomba/pswich area. This distance should be available quite often providing there are operators to come on the air. The other distances are around 600 to 700 km and are quite short for general Es working and would be like Adelaide to Melbourne.

The distance from Perth to Pretoria, according to my very poor map, is somewhere around 10 000 km, which would not be impossible by any means under F2 conditions, in fact, during the peak of Cycle 21, SSB signals were actually heard here in South Australia on 50 MHz. Any Perth stations sufficiently interested to take up the challenge might contact ZS6D or ZS6B. The address is: Hal Lund, PO Box 27746, Sunnyside, Pretoria 0132, Republic of South Africa. I will be writing to Hal in any case.

FROM THE UNITED STATES

Bill Tynan of *The World Above 50 MHz*, in QST for June discussed the matter of band plans, particularly the use of the six metre band in their country and Canada. Their current six metre band plan includes a few frequencies which are of interest to us and I extract from his list: 50.000-50.100 CW and Beacons; 50.060-50.080 Automatically Controlled Beacons; 50.100-50.600 SSB and AM; 50.110 SSB DX Calling Frequency;

50.200 SSB National Calling Frequency; 50.400 AM Calling Frequency; 51.000-51.100 Pacific DX Window; 52.000-52.050 Pacific DX Window. Bill points out that band plans, even when sanctioned by the ARRL Board of Directors, are not binding and they should not be taken as the ARRL dictating to amateurs. They are intended to act as guidelines to help amateurs gain the most from operation on the VHF and UHF bands.

As these notes are being prepared for AR, the Northern Hemisphere is entering the summer ES season. It will be very interesting to see if they fare as well as we in Australia did, particularly on two metres. Bill Tynan reproduced my map of the two metre coverage in QST to show the US amateurs the extent of our contacts. If they do not (and last year they did not) it will be interesting to look for any reasons. It was common knowledge during the peak of Cycle 21 that the Northern Hemisphere fared better on six metres than we did, but it seems the situation may be reversed during the minimal part of the cycles. I am sure both Bill and I will be monitoring their results very closely. Lead time for publication will probably mean we may not know much of their happenings before the September issue of QST.

EME WORK ON 3456 MHZ

From June QST comes news that the first successful two-way contact by a team consisting of W7CNK, WASNTV and KA5JPD worked on 3456 MHz on April 5, 1987 when W7CNK/5, in Oklahoma City, contacted with KA5JPD/5, in Dallas. Congratulations! The distance is not stated being EME, but is around 300 km terrestrial.

Also mentioned is that DL9KR is the first non-North American station to qualify for a 70 cm WAs in WSRIC, in Mississippi, provided the final State back in January. This advice from March 432 and Above EME News.

THE ROSS HULL CONTEST

The publication of my reply to the comments on the contest made by Gordon VK2ZAB, in June issue brought a swift reply from Gordon. I weighed the pros and cons of publishing further comments from Gordon in lieu of a contest event. I decided to do both! I feel now, as always, that any comment Gordon makes has to be respected and, although we may beg to differ at times, I am sure we still remain very good friends!

The following will refer to salient points made in Gordon's original letter and a comment on my reply in June AR. It is a very interesting event. A mid-May or early August 24-hour contest would favour those who live on elevated sites? Sure it would and so what? Isn't the choice of an elevated site the same as the choice of higher power and/or a bigger antenna?

"Really, you and other planners have got to make up your minds about what you want. Is the Ross Hull to be a contest event? Is it a contest event? a handicap event? an event for the handicapped?, a lottery?, a marathon?, or what?

"This is exactly what the problem is now. The Ross Hull tries to be everything to everybody and that is not possible as we have clearly seen by the lack of participation in it.

"If a winter or spring event would favour those who live in cities? Not quite. It would also favour those who live within VHF/UHF range of the cities and that means about 90 percent of the population. I can't see how you could hope to do better than that. Again, this is the problem now. In attempting to suit everybody, you finish up satisfying no one. VK2ZAB is right. The address is: Hal Lund, PO Box 27746, Sunnyside, Pretoria 0132, Republic of South Africa. I will be writing to Hal in any case.

"3. I don't think Adelaide to Albany contacts have ever occurred in mid-May or early August, but if they have or if there are any other specific paths that are liable to see anomalous propagation at those times, the answer is simple — Ban those paths from the contest.

"4. Your comment that people would not have the incentive to go portable for a 24 hour contest does not hold up at all. People go portable for the John Moyle, don't they?

"Also, the incentive is born of the prestige and/or the prize. I do not think a \$1000 trophy each year would be too hard to arrange, do you?

"Therefore, people will go portable if you make it worthwhile one way or the other and I do not envisage any time limit on setting up either. They can set up a week or a month before the event if they like.

"Finally, I think that a 48 hour contest at the height of the anomalous propagation season is doomed to failure. It merely makes the bad aspects of the current Ross Hull arrangement even worse; eg the chances of a two metre, 70 cm and even 23 cm opening to ZL from VK2 is quite high at that time. Imagine the screams from VK61 that occurred during the contest! No way, Eric. You must eliminate the bias of anomalous propagation one way or the other, otherwise the event is a no contest, a farcial lottery! 73. Gordon VK2ZAB."

Well, there you have it. At least I have not backed off despite some very direct comments at me. I have to say that I do see a very small chink of light appearing in my armour which means I might be seeing more wisdom in the above approach than I first anticipated. If something was to be done for the winter period, then perhaps it could be worth a try in 1988 which is the Bi-Centenary year. If the new Federal Contest Manager, in Tasmania, agrees, it may be possible to then drop the Ross Hull from December 1987 and try it in June/July 1988 (not the holiday weekend in June though), in this way we can gauge what support is forthcoming for a non-anomalous propagation period. I would also like to have an indicator of whether general activity drops off in the summer ES period when compared to the contest running — however, this may be difficult to judge in just one year.

Okay. The subject has been hammered pretty well for the past two years. Can we have some positive constructive comment from the multitudes perhaps covering the following points in order to get specific answers to specific questions.

- 1 Do you favour a Ross Hull Contest in June or July? If so, when?
- 2 If not, when do you favour the contest being held?
- 3 Are you in favour of a 24 hour contest, say a UTC day?
- 4 If not, how long do you want the contest?
- 5 What bands should be used?
- 6 How do you decide winners? Points score similar to present? Maidenhead grid squares? Or what?
- 7 Should there be some bonus for portable operation? If so, what?
- 8 Would you support a June/July Ross Hull Contest?
- 9 Would you enter a log?
- 10 If you still want a contest in December will you support it?
- 11 Would you enter a log?
- 12 Have you any other constructive comments to make?

It would be pleasing to have several hundred replies to these questions arrive on my desk by the end of August. That will mean you will have to settle down and think about the contest and pen your reply right away. If you are given more time please write for as long as you have done in the past! Go on, please write now.

WESTERN AUSTRALIA

Wally Howse VK6KZ, has also written in response to my stirring on the Ross Hull. I had to weigh whether to include his letter this month in view of the fact that the coverage of the contest month, but I decided it was necessary this month when I have already asked for feedback by the end of August.

Wally has also included some views on the 2304 MHz band and higher which I will deal with next month. This band has been the subject of considerable correspondence between VK6KZ, the WA, DOC and others and merits further comment later.

From Wally VK6KZ: "Dear Eric. Well your column in AR for June has stirred me to write to you regarding the Ross Hull Contest!!

"I agree totally with Gordon VK2ZAB, that the present rules mean that 'being there' is all important if winning is the objective. I would add

'living in a big city' as a second need — again if winning is the objective.

"However, winning is not the objective of everyone!

"Many people, me included, get a lot of pleasure out of participating in a period of high activity and getting satisfaction at exchange numbers which is a little more challenging than the 59 report one hears so often with HF contests and DXpeditions.

"I know of no boycott of the Ross Hull in WA under the present, or previous rules. My log shows my participation in the Ross Hull Contest in all years of the last decade with the exception of 1985/86, when I was on holidays with my daughter in Canberra. Last year, I gave 55 numbers. However, I have not sent my log in to the Contest Manager every year. Anyway, why would I want to when I know that the score represented is by no means a 'winning' one? I know I was in the contest. Those who worked my station know I was in the contest. Why is it important for the Contest Manager to know that I was in the contest? The fewer logs the Manager has to process the easier the job.

"The exchange of numbers gives one a very good assessment of the likely results of other competitors, at least under more recent rules, and is a very good guide as to whether a log entry for the purpose of 'winning' is likely to be worthwhile.

"To me, the Ross Hull Contest is very much like golf in that it is a type of activity in which one can participate, at one's own level of performance, and gain a lot of satisfaction by competing against oneself without having to publicise the performance via the entering of the scorecard to the Golf Club or a log to the Contest Manager.

"The most important function of the Ross Hull Contest is to increase activity and provide a challenge for participants to test their

- operating skills
- equipment
- understanding of propagation conditions (depending on the rules); and
- ability to give a lot of time to operating during the contest periods (depending on the rules).

"In so doing, the Ross Hull Contest has contributed much to our record of propagation on the VHF/UHF/SFHF bands from the uniquely widely dispersed amateur radio service operators. From this record, some researchers may be able to improve their understanding of what is anomalous and what is not in VHF/UHF/SFHF propagation — providing those records are kept in an appropriate form. That keeping of the data is probably the most compelling argument for the submission and retention of logs. However, does the WIA keep the logs and are they in a form which could help the researchers? I doubt whether either of these things happen. Could or should, they?

"So much for my philosophy regarding the contest. What of the future?

"I agree with your analysis of Gordon's alternative of a mid-winter contest. The contest is best held in the summer months if the six metre band is to be included. If that band is not included, then the contest will almost certainly favour operators in areas of high population density, or at an appropriate distance from such an area or those operating on the maximum number of bands (depending on the rules).

"In my view, the Ross Hull Contest should be based on rules which provide a points score for each contact which reflects the probability of it being achieved and all contacts with the same probability given the same points. Hence those contests in which, in past years, have reflected a relationship between frequency and distance have been in the right direction as they have required some consideration of the propagation characteristics of each frequency band and probability of contacts over the distance (as currently understood). Hence, this links to my earlier comment of the real significance of the Ross Hull Contest is that one which Ross Hull himself might have wanted to encourage) namely that of increasing our understanding of propagation of the VHF and higher bands. The real scientific analysis may not have been done but the logs of contestants have influenced the establishment of the points table. If my arguments are followed, then the

Contest Manager, or at least the person responsible for the rules, should be an ardent VHF/UHF/SFHF operator with an interest in propagation and not necessarily be linked with other contests.

"I now turn to the question of the bands above 52 and 144 MHz. Those two bands and 432 MHz have now advanced to the stage where activity is high, propagation characteristics are reasonably well-known, to most operators and equipment for them is usually purchased rather than home constructed (the black box bands). In due course, one might expect 1296 MHz to join this black box group. However, for the higher bands, commercial equipment is still fairly rare and the spread of stations operating on those frequencies very limited. If we want to learn, as amateurs, more about those bands then activity needs to be encouraged and the Ross Hull Contest certainly did that when band multipliers were included in the rules. Your column suggested, correctly, that Reg Galle VK5QR and Wally Green VK6WG, did not have the incentive of the contest to become active on the SFHF bands — the propagation path was enough. You did not refer to me, to Don Graham VK6HK, to Les Jenkins VK3ZBJ, and others in WA (such as Bob Pine VK6ZFV, Phil Casper VK6ZKO, and Barry Grey VK6ZSB) and in Victoria, who built their gear for the higher bands because the Ross Hull rules, at that time, encouraged such construction and activity on those frequencies.

"My view is that the rules should continue to encourage people to operate on all bands for which we are licensed to operate and, in particular, those bands which are in greatest danger as evidenced by the actions of the DOC with respect to the 432 and 2304 MHz bands in recent times.

"To maintain the interest of those who are limited to the lower frequency bands, I would wish to encourage the Ross Hull Contest to run in at least two sections. The first section would comprise the lower bands 52, 144 and 432 MHz (with 1296 MHz being added in about three years time). The second section would comprise all bands higher than those in Section A. In both cases, I would wish to see band multipliers to provide an incentive for operation on as many bands as possible and points allocated on the probability concept described earlier. I would not see any merit in loading points for different call areas (not because I am very distant from most of them!) since these are artifacts of history and politics and there is no scientific relationship between them. Section A might be seen as the primary contest with Section B as secondary.

"As for the length of the contest, I see merit in it being a month in length in exploring propagation and encouraging activity for that period. However, such a length is very demanding and my lowered level of activity in recent contests reflected my inability to 'be there' all the time. The concept of a seven day period may be worth testing and if it is tried, I would encourage it to start on December 26, so as to allow serious operators to enjoy Christmas Day with families and friends without worrying about the contest!

"Well, you did stir me to write! Thanks for the stirring!!"

50-54 MHZ DX STANDINGS

DXCC Countries based on information received up to May 31, 1987. Cross-band totals are those not duplicated by six metre two-way contacts. Credits have not been given for contacts made with stations when 50 MHz was not authorized.

Column 1: Six metres two-way confirmed
Column 2: Six metres two-way worked
Column 3: Cross-band (6 to 10) confirmed
Column 4: Cross-band (6 to 10) worked
Column 5: Countries heard on 50 MHz
Column 6: Countries heard on 52 MHz

CALL SIGN	1	2	3	4	5	6
VK9BG	42	42			13	
VK2BA	30	30				
VK4ZJB	30	30			4	
VK2QF	26	26				
VK2VC	26	26				
VK2DDG	25	26		2	12	3
VK3OT	25	26			10	
VK3AWY	22	22				

VK2KAY	21	23				
VK2BNV	20	20				
VK5LP	20	22			6	3
VK4ALM	20	20				
VK3QX	19	20			1	
VK4VW	18	20			2	1
VK3AMK	17	17				
VK4TL	17	17				
VK9XT	17	21				
VK3AUI	17	21				
VK4ZAL	17	17				
VK3NM	16	17				
VK4ZSH	15	16				
VK2ZRU	15	16			1	3
VK4ZX	12	17				
VK9YT	12	14				
VK6OX	10	10	1	1		
VK6RO	9	9	3	3	2	3
VK4KHZ	8	10				
VK6HK	8	13			3	2

OVERSEAS

JAZT70	48	48				6
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The minimum number of countries confirmed for an operator to commence being listed is five, including VK.

The position on the list is determined by the number of confirmed contacts. Where two or more operators have the same total, those first date listed with that total can only be displaced by someone having a greater number of confirmed contacts.

The next list will appear in February 1988, and entries will need to be on my desk no later than December 15, 1987. Claimants are reminded that full details of all contacts are required; viz date of contact, time in UTC, call sign of station worked, country, mode, report sent and received, QSL sent and whether received, split frequency contacts should be indicated. Please add your own call sign, signature and date of claim.

I reserve the right to ask any claimant for QSL cards for perusal to support verification if considered necessary.

WINTER TIME SPORADIC E

I recently received an excited phone call from Peter VK8ZLX, in Alice Springs, who reported that on June 3 around 0700 VK8ZMA had monitored a VK5 working a VK3 or two metres! So far I have been unable to trace the stations concerned, but if correct, I think it is probably the first recorded instance of two metre Es during winter months. Apparently Channel 4 television was reasonable copy at the time, and the station was the same station at Port Pirie which would tend to support the fact that the MUF must have been very high at the time. Very interesting. At the same time, six metres was open from Alice Springs to VK2, VK3 and VK5.

It is becoming more obvious that operators are still alert for the occasional odd-openings because more of them are being reported. These, coupled with the 70 cm positive Es report from Roger VK5NY, and the station in Brisbane last summer, tends to make the rethinking of old ideas necessary.

No reports have come in of anything else of a spectacular nature, so it appears the bands are reasonably quiet. I observed a VK4 on six metres on 4/6 around 0630, but had to catch the mail so could not stay long enough to make a contact.

CLOSURE

It may come as a shock to most of you, but I am seriously considering moving away from Forrester to live at Meningie, 148 km by road from here on the shores of Lake Albert and south east of Adelaide. The move is for health reasons as I am sure the milder climate will suit my back problems. This is only a preliminary announcement to warn correspondents to keep their eyes on my address, but I should be able to say definitely next month. Naturally the area should be a good VHF site with a water path almost all the way to Albany! And Melbourne should be in range too.

Closing with the thoughts for the month: "It is easy to distinguish between a wholesale price increase and a wholesale price decrease — one of them gets passed on to us" and "You really find out who your friends are when your cat has kittens!"

73. The Voice in the Hills.



Contests



Ian Hunt VK5QX
FEDERAL CONTEST MANAGER
Box 1234, GPO, Adelaide, SA, 5001

CONTEST CALENDAR

AUGUST

- 1 YLRL YL-OM SSB Sprint (Rules this issue)
- 8 - 9 European CW Contest
- 15 - 16 Remembrance Day Contest (Rules July)
- 15 - 16 SEANET SSB Contest (Unconfirmed)
- 22 - 23 All Asian CW Contest (Rules July AR)
- 1 - 31 40th Anniversary Pakistan Award (See notes July AR)

SEPTEMBER

- 20 - 21 Scandinavian CW Contest
- 26 - 27 Scandinavian SSB Contest
- 26 - 27 CO WW RTTY Contest

OCTOBER

- 3 - 4 VK/ZU/Oceania SSB Contest (Rules this issue)
- 10 - 11 VK/ZU/Oceania CW Contest (Rules this issue)
- 24 - 25 CO WW DX Phone Contest

NOVEMBER

- 14 Australian Ladies' Amateur Radio Association Contest
- 14 - 15 European RTTY Contest
- 28 - 29 CW VVW DX CW Contest

Contests listed in **bold type** are WIA sponsored contests.

I wish to advise a correction in the mailing deadlines for logs in the All Asian Contest. Logs must be postmarked no later than July 30, for the phone section and September 30, for the CW section. (Not the arrival dates published in last month's issue).

NZART MEMORIAL CONTEST

Well, the lines were crossed as far as the timing of the NZART Memorial Contest was concerned. Instead of being held at the same time as our Remembrance Day Contest it was conducted on July 11 and 13. Obviously a misunderstanding which I am not able to explain at this stage. I would hope that our new incoming FGM might be able to sort this out as I believe that it could be in the best interests of all concerned for both contests to coincide.

You will note that it appears the SEANET SSB Contest is again set to clash with our annual Remembrance Day Contest. This is most unfortunate, however it is completely out of my control. I do not receive any correspondence from the SEANET Officers advising me as to their contest. I would wish to point out that, from long before the advent of the South East Asia Net (SEANET), the WIA was holding the annual Remembrance Day Contest on the weekend closest to the August 15, the date on which hostilities ceased in the south-west Pacific area. I would hope that, in some way, this clash of contests in the same general geographic area may be resolved. Perhaps some of you have regular contact with SEANET and might be able to suggest that the matter be looked at by that organisation.

FEDERAL CONTEST MANAGER'S REVIEW

Nearly three and a half years ago I was approached on the subject of taking on the assignment of Federal Contest Manager. I agreed to carry out this task and as far as possible, occupy the position for the recognised term of three years. I have managed to do what I agreed to and I can also state that the time period involved seems to have passed very quickly. (Maybe that is because I'm growing older). I would like to briefly review this period of tenure now and make some comment which I hope will be of interest and also be constructive and helpful.

The position was undertaken without very much information being available to rather green Contest Manager. I had been interested in contesting

for quite a few years and thus had followed the writings of such forerunners as Peter VK4PJ, Wally VK2DWE and Reg VK1BR, etc. No comprehensive set of guidelines or terms of reference existed for the position, thus there was not too much to go on. One was left very much to one's own devices. Such material as was passed along by my predecessor mainly comprised copies of routine correspondence or records of doubtful historical value.

I had several ideas in mind to try to clear up the contest scene and had some of my suggestions adopted by previous FCMs.

One of the first approaches was to attempt to make the Contest Column more interesting and provide more useful information for both contesters and others who are perhaps not so interested. To this end I began a series of articles regarding contest techniques, log-keeping, station layout, etc. I also provided advice regarding Field Day operation.

Amongst other things I asked for information from Divisions and members. From the former, not much, if anything, was forthcoming. However, some individual members responded.

I wished to see some changes to contests and yet, at the same time, desired to achieve stability of rules. I feel that these objectives were achieved, with the noted exception of the Ross Hull Memorial Contest, the lack of support for same having, for many years, been most disappointing. Changes which were made included shifting the timing of the VK Novice Contest to the month of June, which was designed to help with operation on the "main" Novice band of 80 metres. (It is certainly a winter-time band) and moving the Field Day Contest to late March rather than have this contest held during the high fire danger month of February. It would appear that these changes have paid off.

I also believed, and still maintain the opinion, that there are too many contests (count up the Contest Calendar for a year sometime if you don't believe me), and I fought quite a battle to have the CW-only contest disbanded rather than have this as an initial anniversary contest. Fortunately, Federal Council eventually saw the commonsense in what I was trying to convey. I did find some difficulty in having matters dealt with and agreed to by Federal Council. There always seemed to be an inordinate delay in having matters dealt with. Guidelines, whilst now available, need to be just that. Flexibility is really necessary if a good job is to be done. There is also a need for Federal Council to take proper notice of recommendations from the Federal Contest Manager. His advice should be probed and tested but taken seriously. I have attended quite a number of Federal Conventions and have never ceased to be amazed at the number of people who become "instant experts" on all aspects of amateur radio. Background material should be carefully considered and, if necessary, matters should be referred back for further advice before any decision is made where any doubt exists. Along with this approach comes the need for the system to be made more streamlined to allow greater flexibility and speed in decision-making. In this way we may be able to shake off some of the taint of "old fogeydom" of which the WIA is sometimes accused. I might add the point that, where Federal Officers as employees, albeit voluntary, of the Institute are involved and listening to their advice is concerned, you "should not keep a dog and bark yourself".

Amongst other matters I have tried to implement have been printed log sheets specifically for contests, provision of additional prizes and trophies, and separate trophies for Phone and CW in the Contest Championship. These latter are, I believe, on the way, whilst the other matters will be left to my successor to deal with along with the problems concerning the Ross Hull Contest and having the Field Day Contest broken down into two further contests.

Now, the above comments might sound like a gripe and perhaps they are in some small way. Rather than have you believe that I leave the position with a bad case of sour grapes, I would explain that I am a realist. I never did expect that everything I thought was right had to be accepted by others as such. I mention that matters concerned merely to try and provide some basis for yet further discussion where interest exists in working towards further improvement for the betterment of our hobby generally and not only contesting to the exclusion of all else. In some small way, what I have written may serve as a record of some use to later historians.

I have enjoyed the task of Federal Contest Manager and have had the value of experience from doing what I have been able to do.

I would also like to acknowledge help that I have received from some individual members. In doing so, I wish also to express my thanks generally to all who have written or telephoned with ideas and questions. Specifically I refer to Bill Rice VK3ABP, our Editor, for whom I have great admiration and respect, both for his wide general knowledge, as well as his high ability in his professional field. I must also thank Ken VK3AH and his wife Bett, who have done a great deal which is unknown to many in keeping our magazine going. Ken has always provided me with useful advice as to the preparation of material for typesetting. Reg Macey, our ex-Secretary/Manager and Earl Russell VK3BER, have always been of great help. I must acknowledge the constant contribution of Frank Anzalone W1WY, of useful advice and discussions available from my contacts with Jack While ZL2GX. My relations with Federal Executive have always been excellent and I thank those members who have been so co-operative as well as commend them for their mighty efforts put in on behalf of us all. Throughout all of my term I have been able to have access to our VK5 Divisional Federal Conciliator and our Divisional President. Their encouragement and advice has been wonderful.

Certain individuals members I would mention are Jim VK2BQS, who has been one of my most loyal supporters. Les VK3ZBJ, has always been prepared to submit useful comment on VHF/UHF matters. Les, in fact, went to the effort of paying me a personal visit last year to discuss contest matters.

I could not let the opportunity pass to express my thanks to Eric Jamieson VK5LS, for all his help in trying to sort out rules and regulations to make some sense of the Ross Hull Contest. I trust that our efforts will not have been in vain and that some good may eventually come out of the work that has been done.

I have made many friends on the air and might say that I have never experienced any form of unpleasant comment on the bands. Rather, I have received much kindness, interest and encouragement. The same can be said of most comments provided with logs and other letters received by me.

I have not always replied to letters direct, but again I can assure you that, where you have not received an answer via this column, your letter has not been ignored. Many of you have provided a personal address which has been used to try and improve our hobby. For your help and support I am indeed grateful.

As stated elsewhere, I am not dropping the position into the lap of my successor without providing some support. I have been conducting regular schedules with him and I am sure that a smooth changeover will result. As part of this "tailing off" I will be completing the handling of the VK Novice Contest and the production of all certificates up to, and including, this contest. Should you have any queries involving contests to this stage you can still make contact with me and I will do my best to sort matters out.

I will naturally be involving myself in other activities with perhaps a little respite from deadlines, etc, and I will certainly be continuing with contesting, albeit with a limited amount of time available for such events.

As from next month, the September issue, the new Federal Contest Manager will be able to introduce himself to you. I am sure that he will be able to improve further the contest scene here in Australia. I am also sure that he will have many more good ideas to put into practice and that a new approach to the task will indeed be most beneficial.

I commend to you the value of providing support and trust that you will continue to provide the kind of support that I have received over the past three years.

I would like to finish this contribution to the column by providing you with a portion of the text from my Annual Federal Contest Manager's Report to the 1987 Federal Convention, as follows:

"FINAL COMMENT"

"At this time my term of office as Federal Contest Manager is almost concluded. I would expect that my final contribution to *Amateur Radio* magazine in this office will be for the August 1987 issue.

"I will, as intimated in an earlier portion of this report, ensure that any loose ends are tied up and that the new incumbent will be able to commence his duties with a clean slate. I will also continue to be available to provide any advice and counsel should it be requested.

"I wish the new FCM, whoever he/she may be, all the very best in the position.

"I have enjoyed the privilege and experience which has been made available to me by virtue of having held the post of FCM for the last three years. There have been times when some strain has been evident, however this has been compensated for by the remarks of encouragement and appreciation received from time to time from individual members. Such cases have far outweighed in quality and number any complaints received.

"I have tried, as FCM, to bring an era of rationalisation and improvement and feel that I have achieved many of the goals which I set. I have also attempted to make the contesting scene interesting for all concerned including readers who are not primarily interested in contesting. I am rather glad though, that the Australian contest scene does not have the "rat race" characteristics which I have observed in some countries, both during my various trips abroad and in my on-air contest experiences.

"I have been happy to be able to serve my fellow amateurs in some way and must indeed admit to some slight sadness of thought due to my term having concluded. I do have many other commitments which carry a very great priority over anything else and I do look forward to some possible relaxation of the load upon my shoulders.

"Last, but not least, I would wish to claim that I have attempted to bring to my own small sphere of amateur radio a level of balance and also of the higher values and ethics which I believe we should put into practice as a normal part of our daily lives. I do not hesitate to state my beliefs that these standards of values and ethics are based on Christian principles.

"I wish the Federal Council, our Federal President and all members of the Executive the very best for the future and express my wish that your deliberations will always result in the best possible outcome for the benefit of amateur radio in both this country and on a world-wide basis.

Signed: Ian J Hunt VK5QX
FEDERAL CONTEST MANAGER"

FINAL, FINAL

I would like to wish each and every one of our members and all amateur radio operators generally, the very best in their efforts associated with our hobby. I would like to think that, for you, amateur radio will always be a rich and rewarding experience and also that you do not allow it to

cause difficulty between yourself and your family or neglect of any other responsibilities. I would hope that our hobby will become a shining light to the rest of our community as an example of co-operation and service.

To each of you, my warmest greetings.

73 de Ian VK5QX

YL/OM SUMMER SSB PRINT

Time period from 1800 to 2200 UTC, Saturday August 1.

As the name implies, this is a four-hour "shorty" organised by the YLRL. Only contacts between YLs and OM's count, on all HF bands, no nets or repeaters and a power limit of 1500 watts PEP (A little more than VK stations are allowed, anyway).

EXCHANGE: Call, RS, name and state, province or country.

SCORING: (A) One point per QSO. Same station may be worked once on each band. (B) Alphabetic multiplier. Using the last number of the call; ie W1XZ is 1X, W2QL Br is 2G, 9VKA is 4A, etc. (An unusual method for multipliers and somewhat of a novelty, I feel — FCM). (C) Low power bonus of 1.5 for stations using 200 watts PEP or less at all times. (D) Final Score — total QSO points (A) times the multiplier (B) times low power bonus (C) if applicable.

FREQUENCIES: 3.955, 7.255, 14.265, 21.395, 28.595 MHz; plus 10 or 15 kHz.

AWARDS: Certificates to the three highest scoring YLs and OM's, and to the highest scoring YL and OM in each US district, VE Province and DX Country. (Minimum of 10 valid contacts). Print or type logs and show scoring. Operators signature is requested. All entries must be received by September 1, 1987, and should be sent to Mary Lou Brown NM7N, 504 Channel View Drive, Anacortes, WA, USA 98221.

Whilst speaking of YL organised contest, I would like to add a little advertisement for the ALARA Contest to be held in November. I would suggest that you keep this well in mind. The rules should appear in the October issue of *Amateur Radio*. This is a really good contest and it deserves your utmost support (FCM).

CONTEST DISQUALIFICATION CRITERIA

A standardised approach is taken to the disqualification of logs entered in all of the contests which come under the direct control of the Federal Contest Manager appointed by the Federal Executive.

A perusal of these criteria will show them to be quite fair and well thought out. They are based on those used by the ARRL in administering their contests. It is suggested that you take note of this particular issue of the magazine for reference to these general rules in the case of all contests for the ensuing year. Details are as follows:

DISQUALIFICATION — An entry in WIA conducted contests may be disqualified if, upon checking of logs, it is necessary that the overall score be reduced by more than two percent. Score reduction does not include correction of arithmetic errors. Reductions may be made of unconfirmed QSOs or multipliers, duplicate QSOs or other scoring discrepancies. An entry will be disqualified if more than two percent duplicate QSOs are detected as being claimed for credit. For each duplicate or mis-copied call sign removed from the log by the Contest Manager, a penalty of the deletion of three additional QSOs of equivalent value to the offending claim may be applied. The penalty will not be considered as part of the two percent disqualification criterion. If a participant is disqualified under these afore-mentioned provisions that operator will be barred from entering the contest for that particular mode in the ensuing year; eg disqualification from the 1987 RD Contest, Phone Section will prohibit an entry for the 1988 RD Contest, Phone Section. However, participation in the 1988 RD Contest's CW Section would be allowed.

Logs which are very untidy, illegible or incorrect in layout to a major degree may also

be disqualified. The call signs of disqualified participants may be listed in *Amateur Radio* magazine, together with the contest results.

THE 11TH WEST AUSTRALIAN ANNUAL 3.5 MHz CW and SSB CONTESTS Transmitting and Receiving

DURATION:
CW — Saturday and Sunday, August 15 and 16.
SSB — Saturday and Sunday, September 19 and 20.

On both days between the hours of 1100 and 1330 UTC; ie five operating hours in all for each contest.

FREQUENCIES:
All contests to be made in the 3.5/3.7 MHz band using frequency allocation applicable to your licence conditions.

CALLING:
Stations will call CQ WAA using the three times three technique, infringement of this rule by the use of long CQ calls may entail disqualification as will prearranging of a QSO.

SCORING:
Points for contacts are as follows:
Within Western Australia five points per contact
WA to all Mainland Eastern States

WA to VK7 two points per contact
WA to VK0 and Overseas four points per contact
Three points per contact with WA stations only.

MULTIPLIERS:
A multiplier of two per Western Australian Shire worked will apply to the final score. For Western Australian stations north of the 26th Parallel a multiplier of 1.3 per contact confirmed.

CONTACTS:
Stations may be worked twice on each night; ie once between 1100 and 1300 UTC and again between 1300 and 1330 UTC. These contacts will count for points. Each time the contact for WA stations will take the form of an exchange of five characters comprising RS/T and Shire letters; eg a station in *Northam* sends 579NM or if in *Harvey* 579HY, this helps towards the Worked All Shires Award. Eastern states and overseas stations will send RS/T plus a running number start at 001.

LOGS:
Contest logs are to be set out on one side of a quarto or foolscap sheet with columns headed as below.

DATE:	CALL:	OPERATOR:
TIME UTC	CALL- RST IN- OUT	SHIRE LETTERS
WK- D	SHIRE MULTIPLIER	POINTS CLAIMED

Column seven to be totalled at the foot of each page and the running totals brought forward. The last page to contain the following summary: Total number of points scored, Input power, Equipment and Antennas used, along with comments on the contest in general.

SWL participants score as above using the outgoing transmit score.

All logs to be addressed to WAA Contest Committee, 42 Kennedy Street, Melville, WA, 6156 and posted so as to reach the destination not later than October 16, to both contests. The results for both contests will be published in December's issue of *Amateur Radio*.

SHIRE LETTERS

1. Albany Town	AL	73. Lesore	LA
2. Albany	AT	71. Mandurah	MA
3. Armadale	AK	72. Manjimup	MP
4. Augusta Margaret	AM	73. Meekatharra	ME
5. Bayswater	BA	74. Melville	MV
6. Bayswater	BS	75. Meriden	MD
7. Bering	BV	76. Merredin	MR
8. Boddington	BD	77. Minnowbrook	MB
9. Boulder	BO	78. Moora	MO
10. Bussell	BU	79. Morawa	MR
11. Bridgetown	BR	80. Norseman	NS
12. Brookton	BR	81. Northam	NO
13. Bullock	BL	82. Nullagine	NU
14. Broomfield	BR	83. Nundering	ND
15. Belmont	BL	84. Nyngon	NY
16. Bruce Rock	BR	85. Murray	MY
17. Bunbury	BN	86. Mt Magnet	MM
18. Bussell	BU	87. Mt Marshall	ML
19. Canning	CA	88. Nannup	NL



Awards

Ken Hall VK5AKH
FEDERAL AWARDS MANAGER
St George's Rectory, Alberton, SA 5014

ROARS 15TH ANNIVERSARY 1972-1987

The Royal Omani Amateur Radio Society, which was formed under the gracious patronage of His Majesty Sultan Qaboos Bin Sa'id A4XAA, is happy to announce a special program for their anniversary.

To celebrate the event, the Society will operate a four-day non-stop special event station from 0200 UTC, Thursday November 5, 1987 to 2000 UTC, Sunday November 8, 1987, using the special call sign A4XXV.

Operation will be on the 160, 80, 40, 20, 15 and 10 metre bands using SSB, CW, RTTY and AMTOR. A special and exclusively designed award will be available for all operators who can satisfy the following conditions.

- i Work or hear A4XXV on two different bands or two different modes.
 - ii Claim by certified log extract.
 - iii Award Fee of 10 IRCs or equivalent.
 - iv Award deadline: June 20, 1988.
- Claims to The Awards Manager, ROARS, PO Box 981, Muscat, Sultanate of Oman.

ROARS will be looking for radio amateurs in all countries.

—Contributed by A Razak Ali Shehwarzi A4XJT, Chairman

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Gary VK3ZHP**

28. Capet	CL	89. Norwood	NH
29. Cammah	CH	90. Norridge	NC
30. Carrarvon	CH	91. Narragjin Town	NT
31. Chapman Valley	CV	92. Nedlands	NL
32. Chittenden	CH	93. Northam	NC
33. Claremont	CT	94. Northam Town	NH
34. Cockburn	CR	95. Northampton	NH
35. Collie	CE	96. Nungah	NC
36. Coolgardie	CG	97. Peppermint Grove	PD
37. Coorow	CW	98. Penzance	PN
38. Corrigin	CC	99. Perth	PT
39. Cottbus	CT	100. Pinnaroo	PP
40. Cranbrook	CK	101. Plantagenet	PT
41. Cullabulgin	CU	102. Port Hedland	PH
42. Coober Pedy	CP	103. Quairading	QT
43. Corderley	CD	104. Ravenshoe	RV
44. Dalwallinu	DU	105. Rockingham	RT
45. Dandenong	DD	106. Rossmore	RS
46. Dardanelle	DP	107. Sandstone	SS
47. Denmark	DK	108. Serpentine Jarrahvale	SH
48. Denisonburg	DN	109. Shell Bay	SB
49. Derrin	DR	110. South Perth	SP
50. Dumbleyung	DU	111. Stirling	ST
51. Dundas	DD	112. Subiaco	SU
52. East Fremantle	EF	113. Swan	SW
53. East Pilbara	EP	114. Tambellup	TM
54. Esperance	ES	115. Taree	TR
55. Exmouth	EX	116. Three Springs	TS
56. Fremantle	FM	117. Tynny	TY
57. Gungahlin	GU	118. Tropic	TP
58. Gungahlin	GU	119. Upper Gascoyne	UG
59. Geraldton	GD	120. Victoria Plains	VP
60. Geelong	GE	121. Wagle	WG
61. Gosnell	GS	122. Wandsworth	WD
62. Greenough	GR	123. Waroona	WR
63. Hall Creek	HC	124. Waroona	WR
64. Harvey	HA	125. West Arthur	WA
65. Irwin	IR	126. Westonia	WO
66. Kalamunda	KA	127. West Pilbara	WP
67. Kalbarrie	KL	128. Wickham	WI
68. Kalbarrie	KG	129. Wiluna	WL
69. Kallbarrie	KN	130. Williams	WL
70. Kent	KT	131. Wingen Bullfinch	WB
71. Koppin	KP	132. Woodswell	WO
72. Koolberrin	KK	133. Wyalkatchem	WY
73. Koorla	KO	134. Wyndham East	WE
74. Koolberrin	KL	135. Wyndham West	WW
75. Koolberrin	KL	136. Wyndham West	WW
76. Koolberrin	KL	137. Yarrag	YK
77. Koolberrin	KL	138. Yarrag	YK
78. Koolberrin	KL	139. Yarrag	YK
79. Koolberrin	KL	140. Yarrag	YK
80. Koolberrin	KL	141. Yarrag	YK
81. Koolberrin	KL	142. Yarrag	YK
82. Koolberrin	KL	143. Yarrag	YK
83. Koolberrin	KL	144. Yarrag	YK
84. Koolberrin	KL	145. Yarrag	YK
85. Koolberrin	KL	146. Yarrag	YK
86. Koolberrin	KL	147. Yarrag	YK
87. Koolberrin	KL	148. Yarrag	YK
88. Koolberrin	KL	149. Yarrag	YK
89. Koolberrin	KL	150. Yarrag	YK
90. Koolberrin	KL	151. Yarrag	YK
91. Koolberrin	KL	152. Yarrag	YK
92. Koolberrin	KL	153. Yarrag	YK
93. Koolberrin	KL	154. Yarrag	YK
94. Koolberrin	KL	155. Yarrag	YK
95. Koolberrin	KL	156. Yarrag	YK
96. Koolberrin	KL	157. Yarrag	YK
97. Koolberrin	KL	158. Yarrag	YK
98. Koolberrin	KL	159. Yarrag	YK
99. Koolberrin	KL	160. Yarrag	YK
100. Koolberrin	KL	161. Yarrag	YK

VK/ZL/OCEANIA DX CONTEST 1987

It is almost that time of the year again — the VK/ZL/Oceania DX Contest. Here are this year's rules. It would be appreciated if you would not only take an active part yourself, but also encourage all other amateurs and shortwave listeners in your area to do so.

Please advise all societies, clubs and individuals where and whenever possible of this year's Contest. It would also be greatly appreciated if you could advise any technical, amateur, radio, electronic or shortwave listener magazines of this contest.

Should you have any Packet, AMTOR, or RTTY Bulletin Boards in your area, would you kindly place the contest rules on there as well.

If there is any way I can help or assist anyone with this contest or in fact any other amateur related matter, please do leave a message on the VK4BBS Packet Bulletin Board Station on 14.107 MHz. A reply will be sent as promptly as band conditions allow.

Looking forward to receiving a log from you and many more from your area. Do enjoy the contest and make many new friends.

Brian Beamish VK4AHD/VK4BBS (Packet BBS M/Box)
1987 VK/ZL/Oceania Contest Manager
PO Box 254
Stones Corner, Qld. 4120

FOR OVERSEAS ENTRANTS

1. SSB
Within 24-hour period from 1000 UTC Saturday, October 3 to 1000 Sunday, October 4, 1987, during which time a maximum of 12-hours operating time will be done — in one hour blocks based on "even hour to even hour" in UTC; eg 1000 to 1100 UTC or 1300 to 1400 UTC with minimum periods of one hour.

2. CW
Within 24-hour period from 1000 UTC Saturday, October 10 to 1000 Sunday, October 11, 1987, during which time a maximum of 12-hours operating time will be done — in one hour blocks based on "even hour to even hour" in UTC; eg 1000 to 1100 UTC or 1300 to 1400 UTC with minimum periods of one hour.

Receiving SSB and CW Combined in the above times (maximum total 24 hours).

2. Only one contact per mode per band is permitted and all bands except WARC bands may be used.

3. SCORING

** For stations operating outside the Oceania, score two points for each contact with VK/ZL or Oceania stations.

** Oceania stations score two points for all contacts.

4. FINAL SCORE

Multiply total QSO points by the sum of all VK/ZL/Oceania prefixes worked on all bands. (The same VK/ZL/Oceania prefix worked on a different band counts as a different unit).

NB. Oceania stations are those which qualify as Oceania for WAC.

5. CIPHERS

Five or six digit numbers composed of R/S/T report plus three digit sequence number beginning at 001 and increasing by one for each QSO on that band.

6. LOGS

a) Separate logs for each band please and for SSB and CW.

b) Show date, time UTC, call sign of each station contacted, ciphers sent and received.

c) Underline each new VK/ZL/Oceania prefix.

d) State QSO points for each band.

e) State VK/ZL/Oceania prefix claimed on each band.

f) Summary sheet to show:

** Call sign, Name Address

** Total QSO points claimed on all bands.

** Total VK/ZL/O prefixes contacted on ALL bands.

** Declaration that rules were observed.

Post logs to: WIA VK/ZL/Oceania Contest Manager, VK4AHD/VK4BBS (Packet BBS), PO Box 254, Stones Corner, Qld. 4120, Australia. Logs must arrive no later than February 15, 1988.

7. SWLS

A VK/ZL/Oceania station must be heard in a QSO — logs to be set out as for the transmitting section.

8. AWARDS

Separate awards for SSB and CW.

a) Special coloured certificate to the top scorer in each continental area.

b) Special coloured certificate to the top scorer in each country.

c) Participation certificates to all others on request (One IRC for postage please).

** Copy or relevant results available on request (One IRC please).

FOR CHECK WITH STATIONS

Check with overseas rules

Rules 1, 2, 5, 6 as for Overseas stations except ... in Rule 6.

3. VK/ZL/Oceania are permitted to contact each other only on 160 and 80 metres. VK/VK, ZL/ZL and ZL/VK contacts are all permitted on these two bands.

4. SCORING

Different points for contacts on different bands as follows:

160 metres — 20 points

80 metres — 10 points

40 metres — 5 points

20 metres — 1 point

15 metres — 2 points

10 metres — 3 points

Total score will be the total QSO points multiplied by the total number of prefixes worked. The same prefix worked on a different band is counted.

NOTE: K1, W1, AA1, N1, etc, are all different prefixes. W1AA1/6 would count as W6 not W1.

6. CHANGE

Logs to arrive no later than December 5, 1987.

7. SWL SECTION

As for overseas but...

** VKs must hear and log ZL or other stations (no VK stations)

** ZLs must hear and log VK or other stations (no ZL stations)

** ZL/VKs do not log each other

8. AWARDS

Separate awards for SSB and for CW.

a) Special coloured certificates to top scorers in each prefix area and to top scorers on each band.

b) Participation certificates to all others on request. (One IRC or \$1 for postage, etc, please).



TECHNICAL MAILBOX



A letter from VK2DDL poses the following question.

I wonder if you can enlighten me on the following matter.

I find that some manufacturers of receivers and transceivers, particularly those for VHF or UHF operation, specify their receive sensitivity in terms of the signal voltage at the input (usually in the order of one microvolt or less) required to produce a signal plus noise/noise ratio of 10 or 12 dB, while others quote a noise figure in dB, which may be anything from 0.8 to 4 or 5.

However, I have not been able to discover any text or formula explaining how to convert from one form to the other, so that comparisons become difficult. I have attempted to convert the former to the latter by calculating the equivalent noise voltage in a particular specification, converting this to a noise power value at the relevant input impedance and inserting this value in the formula for determining noise figures. The resultant noise figure based on this calculation has been below that quoted for the input transistor in data books, so I am not sure of the error.

I have also noted that the SINAD figure has been quoted for FM equipment as 'PD', which I assume means at peak deviation, but I would be interested to know if this means at a bandwidth capable of containing the maximum peak-to-peak deviation or simply one half of that bandwidth. (eg does a deviation of ± 7.5 kHz imply a bandwidth of 15 kHz or just 7.5 kHz?)

I look forward to seeing the answers to this inquiry in a future issue of *Amateur Radio*.

S V Ellis VK2DDL

VK2DDL has opened up a real can of worms!

Basically what you wish is a direct comparison of performance between one piece of equipment to another. Manufacturers seem to delight in publishing specification figures which can confuse, or in some cases, obscure the issue.

Commercial equipment (eg Land Mobile, Personal Portable, Marine, CB, etc.) in this country is required to meet the Minimum of Communications (DOC) Standards. Equipment is then approved to the relevant Standard and issued with an approval number. The reason for such a system is complex. In simple terms it provides a means whereby frequency allocations can be derived from the knowledge of known minimum technical equipment standards. In this way compatibility between services and efficient spectrum management may be achieved. In fact, frequency allocations can be made by computer when based upon defined minimum equipment standards.

Amateur equipment has traditionally been exempt from such requirements due, in the main, to the fact that amateurs traditionally built their own equipment. Such is not always the case today.

It has become apparent over the last decade that commercial manufacturers of amateur equipment have pressed for deregulation of commercial specifications, thus enabling them to sell their lines to the commercial market.

Unfortunately for the amateur, most of the equipment manufactured has not seen technical advancements aimed towards 'commercial' specifications. There has been an attempt to convince authorities to reduce their requirements. These, we hasten to add, are minimum requirements based upon internationally recommended standards (IEC) aimed towards efficient spectrum management. One would think that as technology advances, specifications would be tightened to reflect the greater use of the spectrum. Alas, the mighty dollar and deregulation pressures are seemingly causing a reverse effect.

Why do we mention such matters in responding to VK2DDL's letter? Well, it goes back to the opening paragraph — "Manufacturers seem to delight in publishing specification figures which can confuse or in some cases obscure the issue." The cold hard facts are that most amateur equipment does not come within a 'bull's roar' of

such minimum specifications. Considering today's amateur population and the band crowding that exists, this appears to be an anomaly. Manufacturers most likely would try to defend themselves on the cost of such improvements, but this is really not a defensible issue! Such improvements should not increase the cost of equipment to the extent most claim.

We, as amateurs, suffer! As black-box buyers, in a limited production market, there is little choice of what to buy, that is if an individual can afford the expenditure these days! Are you attracted to and make your choice purely on the ever increasing options, which are rarely used, that predominate the sales pitch?

Take the general coverage receiver options offered in most HF transceivers. Great! If you analyse how this is achieved it will be found that it is not the receiver aspect of the design that a manufacturer has foremost in mind but the broadband transmit option deliberately built into the equipment. To satisfy Australian authorities and qualify for reduced import duty this option must be deleted by techniques which is uneconomical to reverse. Such a requirement does not apply to many other markets for which the manufacturer caters.

It is important to note that in any specification, a method of test should form part of the specification, otherwise considerable confusion will arise from the interpretation of the results.

In amateur circles many people would first consider, as a receiver comparison, the ability to detect weak signals (receiver sensitivity). If you choose your receiver by such a comparison alone you will most likely not get what you want. The ability of a receiver to handle strong signals (blocking and cross modulation), adjacent channel signal rejection, spurious responses and selectivity are some of the basic factors one should consider.

You may have the most sensitive receiver in your area but find it useless when your local amateur or commercial operator hits the ether and it does not have to be on the same band! There are more poor receivers around than transmitters! Receiver design is a science where short cut cost compromises will greatly affect the end result. It is annoying to see manufacturers promoting the gimmick features instead of producing a high performance receiver.

Do you, as an amateur or SWL, select your equipment purchase on the number of memory channels alone?

Possibly, because most of the relevant comparison specifications are not published. Manufacturers cannot be blamed for not publishing their third order intercept figures for example, as sales may plummet. As such, the purchaser wears it and then blames the other station for splatting or the local Paging Service for wiping out the two-metre band!

Now, after climbing down off the 'soap box', back to VK2DDL's letter.

The questions raised in this letter were discussed with others and particularly with an amateur who is an acclaimed expert in such fields and was most gracious to provide a concise explanation on the matters raised, as follows.

In order to answer fully the question on receiver sensitivity specifications, it is necessary to determine the input signal level required to produce a 10 dB signal to noise ratio from a two-metre SSB receiver with a bandwidth of 2.5 kHz and a noise figure of 3 dB. Firstly, it is necessary to consider some aspects of noise figure (NF) concepts.

Noise Figure is a measure of the degradation in signal to noise ratio between the input and output ports of a two port network, such as our receiver.

Noise Figure is essentially a ratio, so in order to compare it with an absolute value measurement, it is necessary to define an absolute value of input signal at which the noise figure is measured.

This absolute value of input level is given in the

IRE (later the IEEE) definition of noise figure and is the level of the noise available due to thermal agitation at a standard temperature of 290 degrees Kelvin. This is close to the temperature seen by our receiving antenna when it is directed at the horizon and it is also close to room temperature, at least in the colder climes of the Northern Hemisphere.

We can thus place a value on this noise power (Np). It is equal to kT Watts per Hertz

$$\text{where } k = \text{Boltzmann's Constant} \\ = 1.38 \times 10^{-23} \text{ Joules/Kelvin} \\ \text{and } T_s = \text{Temperature (290 degrees Kelvin)}$$

For convenience this is expressed here in decibels below one milliwatt (dBm).

$$N_p = 10 \log 1.38 \times 10^{-23} \times 290 \times 10^3 \\ = -174 \text{ dBm/Hertz}$$

This is a useful figure to commit to memory.

The example receiver has a bandwidth of 2.5 kHz, so the total amount of noise getting through it will be 2500 times -174 dBm. In dBm this is:

$$N_{\text{total}} = -174 + 10 \log 2500 \\ = -140 \text{ dBm}$$

Since NF is a measure of the degradation in Signal to Noise ratio (S/N) and since the method of degradation is the addition of noise by the receiver, the NF is added to the above to arrive at the 'noise floor' of the receiver.

From the above example:

$$\text{Noise floor} = -140 + 3 \\ = -137 \text{ dBm}$$

The example receiver specification called for a 10 dB S/N, so a further 10 dB signal must be added to the noise floor as determined above.

$$-137 + 10 = -127 \text{ dBm}$$

This can be converted to microvolts to compare it to other receiver specifications if the input resistance is known. Generally this is 50 ohms.

From Ohm's Law:

$$E = \sqrt{PR}$$

and it follows:

$$E (\text{microvolts}) = \sqrt{50 \times 10^{-12} / (157/10) \times 10^4} \\ = 0.1 \text{ microvolts} \\ (\text{approximately})$$

To summarise, add 10 times the log of the bandwidth, the signal to noise ratio in dB, the noise figure in dB and -174 dBm to arrive at the signal level required to obtain that S/N. Then convert to microvolts if required.

The sample receiver in this case requires 0.1 microvolts for the case of systems with a receive antenna temperature of 290 degrees Kelvin; ie systems where the antenna looks at the horizon.

A few points worth bearing in mind:

- 1 S/N = (S+N)/N - 1 as ratios. To find the input level required for a 10 dB S+N/N add 10 log (10 - 1) to the noise floor (9.54 dB). This is not very important in most cases.
- 2 An improvement of 1 dB in noise figure is equivalent to increasing the transmitted power by 1 dB in the case of systems with a receive antenna temperature of 290 degrees Kelvin; ie systems where the antenna looks at the horizon.
- 3 Noise figure is not concerned with modulation systems, unlike SINAD for example.

The Technical Mailbox group express their sincere thanks for the expert, concise and easily understood answer which should interest all readers.

Finally, VK2DDL asks about PD. The answer here could be twofold, as an example is not given to clearly define the question.

It could mean, as you say, peak deviation. In this case it would mean that a ± 7.5 kHz would imply a bandwidth of 15 kHz. The implications of such a specification are quite profound for it

introduces the characteristics of receiver performance with respect to a modulated signal. In this way a 'dynamic comparison' may be achieved by such a technique. This is an excellent method of defining the true performance of a receiver in the real world. It is also briefly mentioned in three above.

Another explanation of PD could be potential difference. That is the voltage level when measured across the terminated input impedance of the receiver.

All this proves is that specifications are only as good as the method used to arrive at a figure and this 'figure' must be derived from a meaningful baseline.

It is thought prudent to expand a little further on point two of the answer to the first question.

The noise floor is the absolute limit one faces when trying to detect weak signals, without going into sophisticated techniques where one can go below this limit. In practical terms one can reach a point where lowering the receiver noise figure will not provide an increase in usable receiver sensitivity whilst one's antenna is pointing at the horizon. This however is not true when the antenna is elevated above the ground, where, providing it is not 'staring' at a stellar noise source, the usable noise figure then becomes the actual noise figure of the system. EME operators are most concerned with such matters. When dealing with weak signals and marginal communication, the ground noise may be greater than the wanted signal. However, once the antenna is raised, as the Moon rises, a signal of sufficient amplitude will become receivable.

The Earth is one big ball of noise, be it at 290 degrees Kelvin!!

Please Note: Technical Mailbox requires more questions to keep the group on their toes. Readers please submit your queries.

MORSEWORD 5

Compiled by Audrey Ryan
30 Stirling Street, Montmorency, Vic. 3094

ACROSS

1. Exclamation of surprise
2. Be afraid of
3. Informer
4. Strong wind
5. Arab Republic
6. Immense
7. Dr.
8. Stalks
9. Brief records
10. Spigots

DOWN

1. Standard
2. Part of the eye
3. Increased
4. Thick mist
5. Neat
6. Murmur of doves
7. Skin disease
8. Relieves
9. Hybrid animal
10. Festivals

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Solution page 63

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Magazine Review

Roy Hartkopf VK3AOH

34 Toolangi Road, Alphington, Vic. 3087

G General
C Constructional
P Practical without detailed constructional information
T Theoretical
N Of particular interest to the novice
X Computer program

BREAK IN — May 1987. Conference Report (G). QRP Articles (G).

QO AMATEUR RADIO — April 1987. Special Antenna Issue (G & N).

QST — April 1987. Home-brew Hardline Connectors (P). New American Examination Questions (G & N). Home-brew Antenna Hardware (P & N). Messy Shack Photographic Contest (AF).

RADIO ELECTRONICS — May 1987. Electronics in the Next Century (G). Loran (G). Soldering — New Technology (P & N).

SHORT WAVE MAGAZINE — March 1987. One Valve Shortwave Radio (C). Annual Index (G). Compact Helical Antennas (P & N).

SHORT WAVE MAGAZINE — April 1987. Now a magazine for the Shortwave Listener. Some columnists go to Practical Wireless.

VHF COMMUNICATIONS — 4/1986. Satellite Receiving System (C). Wideband VCOs (C).

WORLD RADIO — April 1987. American Novices get more (G). World Amateur Radio News. General Information on Amateur Happenings (G).

73 MAGAZINE — March 1987. 7 MHz QRP Pocket Transceiver (C).

73 MAGAZINE — April 1987. Special Antenna Issue (G). Tower Hazer Unit (P).

Intruder Watch



Bill Martin VK2COP

FEDERAL INTRUDER WATCH CO-ORDINATOR
33 Somerville Road, Hornsby Heights, NSW. 2077

Many reports were received during April 1987, regarding the activities of intruder stations on 28 MHz, originating in Asia. This problem will continue to escalate and we have taken some steps to try to do something about it. However, if we do not receive reports on these activities we certainly have nothing to complain about to other administrations.

Reports received for the month were from: VK1WX; VK2s DEJ, PS, Arthur Bradford; VK4s AKX, BFO, BG, BHJ, BTW, DA, KHO, OD; VK5s GZ, TL; VK6RO; VK7RH; VK8s JF and HA.

There were 171 intruders reported using AM mode (A3E), 194 using CW (A1A), 50 using RTTY (F1B), 11 using different modes and 33 intruders gave their call signs on-air. This announcing of call signs on-air by the intruders is a fair indication of the measure of respect they give to the frequencies of services other than their own. In other words, they blatantly use the amateur

bands, give their call signs, and tacitly state "Well, here we are on your bands, what are you going to do about it?" I can assure you that the Intruder Watch does something about it, but the Australian Administration leaves a little to be desired at their end. We keep hoping that this situation will change.

OH2BLU reports that Radio Tirana "seems to have reduced transmissions on 7.065 and 7.090 MHz" as heard at his QTH. DJ9KR confirms this as heard in West Germany. His summary of activity for April also nominates the call sign of RCQ 45 as belonging to the "V" beacon station on 7.002 MHz. Does it really surprise anyone to note that the call sign commences with an "R"?

So, we continue to monitor the bands, and hope that the amateur population will keep us informed of what they hear. See you next month; good DX and 73.

Bill VK2COP



QSP

NOVICE ENHANCEMENT

THE FEDERAL COMMUNICATIONS Commission (FCC) has announced that it will enhance the Novice licence grade in the United States of America.

New bands and new privileges for Novices will include SSB and Digital privileges in a portion of 10 metres, and access to all authorised modes (including use, but not licensing, of repeaters) in portions of the 220 and 1270 MHz bands.

The full specifics of the enhancement were to be released soon by the FCC.

The ARRL had sought the enhancement to make the Novice licence more attractive to a wider range of people and relevant to today's technology.

In its supporting new privileges and modes for Novices, the ARRL pointed out that it believed this grade of licence should be permitted to hook up computers to amateur station equipment.

The US Novice will be permitted to operate RTTY, ASCII, Packet Radio and other digital modes, and the enhancement also means all grades of US licence now share common bands.

Electro-Magnetic Compatibility Report



RFI IN GREAT BRITAIN — WHERE DO WE STAND (IN DL)?

by Hans Kreuzer DL1AN, CQ-DL 3/87 p 168
(Translated by VK2AOJ)

Hans Ruckert VK2AOJ

EMC REPORTER
25 Berrille Road, Beverly Hills, NSW. 2209

Since January, radio amateurs in Great Britain have received a standard letter from the authorities (DTI), when their neighbours' equipment was affected by their transmitter. The letter contains recommendations on how to overcome the RFI, and the amateur is asked to report within one month that the problem has been overcome to the satisfaction of the neighbour. Otherwise the Radio Investigation Service (RIS) will inspect the station (not the neighbours' equipment for susceptibility, or his/her willingness to co-operate?) and decide which measures have to be taken. A change of licence could be considered!

And worst, the complaining neighbour receives a copy of this letter. It must be feared therefore, that a non co-operative neighbour would see no need to do anything themselves, because the letter seems to imply that it is the amateur's fault which is causing the interference.

The regulation which determines the procedure, appears to be the equivalent to paragraph 9 of our administration regulation DV-AFuG. It was issued without consultation with the RSGB and was apparently published. Only the 20-2-1986 did the RSGB receive a copy during a meeting 'handed across the table'. The RSGB stated then to DTI that the new guidelines were hopelessly against reality, and demanded their withdrawal. This DTI refused to do. Only a revision of the standard letter could be considered.

The RSGB now asks all members to send a copy of the DTI letter to its investigation service. Counter measures, perhaps involving a legal process (court of law), are considered as necessary to avoid a drastic restriction of radio amateur activities.

The RSGB is of the opinion with regard to radiation immunity (of the equipment chassis), that the 1.8 Vm CEELC-Standard, which is being planned by the European Common Market countries, is exceeded by most transmitters (compare EMC Report AR January 1987, p 51-54). As stated by G3OUF 'The Amateur and the Government' News Bulletin of Radio Communication 4/86, (3V/m TEM cell test, Jacky in DL), there are

signs of a European vendetta against amateur radio. Similar reports have come from Belgium.

Where do we stand (in DL)?
When I look at the dubious paragraph 9 of our regulation DV-AFuG and the letter from FTZ (=DOC in DL) published in CQ-DL 2-86, I see little difference in the aims of the authority: Single-sided preference towards manufacturers, dealers and promoters of 'electronic devices for everyone'. The Post Office belongs to this group too.

DJ2NL interprets these rulings in CQ-DL 4/86, to mean that the radio amateur is not and cannot be responsible for RFI from his fundamental frequency radiation (which complies with the law). If this was so, I could transmit freely using all the permitted 750 watts, because most RFI comes from fundamental radiation picked up by the equipment's chassis (PC boards and wiring). The transmitter harmonics can easily be suppressed. I doubt that I can rely on the DL2NL interpretation? In any case, the legal professionals involved are not likely to earn any laurels, if the law can be so differently interpreted. DL1AN

(See also AR January 1987 p61, RIS Problem)

BCI and TVI FROM A TV TRANSMITTER

Members of my family live in Riverview Street, Lane Cove, (A Sydney suburb). They complained that they could not receive the 2MBS-FM radio and SBS Channel 28 television. Investigation showed that the location was in a deeply cut valley into which the antenna from the Channel 10 television station looked down from about 2.5 km distance. Several neighbours had their television antenna pointing away from the television station, receiving reflected signals and ghosts from the opposite valley wall. The serviceman had installed the Hi Fi 'HiTachi' FM tuner to the television antenna installed above the roof. Several ghost FM stations were heard between ABC-FM (92.9 MHz) and 2MBS-FM on 102.5 MHz, where none was actually transmitting. 2MBS was usually covered by interference. The problem was solved with a portable FM receiver, by gradually reducing the length of the telescoping antenna from 100 to 20 cm, until the FM receiver front end was no

longer overloaded by the strong television signal.

The ghost stations had disappeared and 2MBS could now be clearly received. A series-tuned LC shunt wave-trap tuned to channel 10 would have helped too, if a longer antenna had been needed to receive the desired station with a good enough signal for stereo.

The SBS channel 28 television signal gave more or less unsatisfactory pictures (snow and ghosts) on two television sets (National and Sharp) in spite of the professional UHF beam installed above the roof of the two storey house. I made a 12 element long Yagi beam especially tuned for channel 28 using NBS-USA design methods. This worked much better than the other antennas. Three different locations were tried. This 12 element beam gave a good picture free of snow and ghosts only if placed in a critical position on a veranda. Installed above the roof near the other channel 2-10 Yagi the results were not good enough. After the experience with the FM-BC receiver, we tried in desperation a 'rabbit-ear' indoor antenna on top of the television set. It is still there, giving excellent reception with both television sets on channel 28! Who says that one must have a high gain beam above the roof? Perhaps one could save money.

We did not complain to DOC about Channel 10 causing TVI and BCI, nor was a court case started for nuisance or damages, as happened to VES3P ('AR' Feb 1987 and 'QST'). Could one of us suffer like VES3P in spite of DOC support?

Many frustrating cases would not occur, if radio and television manufacturers adopted the RF front end design methods of their colleagues who produce the modern amateur receivers/transceivers (Yaesu, Icom, Kenwood etc). Their designs result in very good dynamic range and intercept point values. They had to do it to overcome severe interference problems, and the same need applies to BC and television receivers too. How much longer will we have to wait for adequate and effectively policed EMC Standards combined with the necessary education of the public?

IAN J TRUSCOTTS

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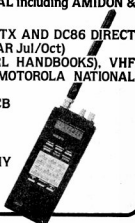
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Pounding Brass

Gilbert Griffith VK3CGG
7 Church Street, Bright, Vic. 3741.

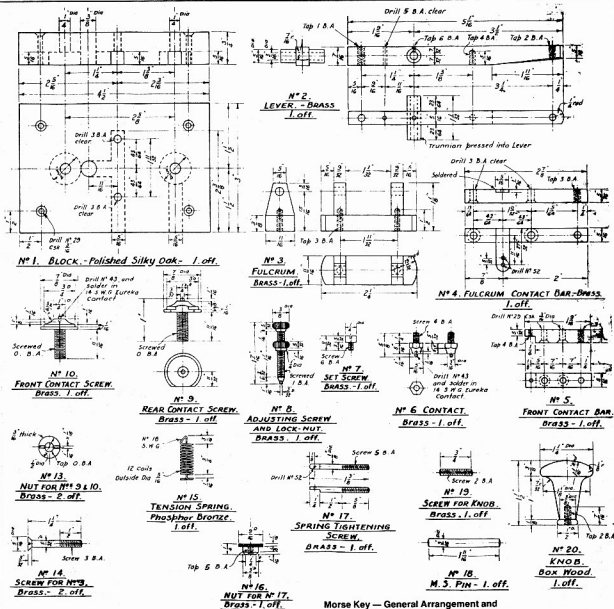
GM, GA es GE everyone. Yesterday I received a letter from Michael VK4BMD, on behalf of the Brisbane North Radio Club. They have a number of active Morse enthusiasts and meet on 3.530 MHz at 0930 UTC each Tuesday. Regulars include VK4APZ, VK4CAV, VK4NCM, VK4MWZ, VK4FTJ, VK4GHW and VK4BIL, as well as some listeners. Visitors to the net are welcome and they will QRS on request. There is also an award available for contacts with five members (VK) or three members (elsewhere). Write to their Awards

Manager for more details at PO Box 78, Chermide, Qld. 4032.

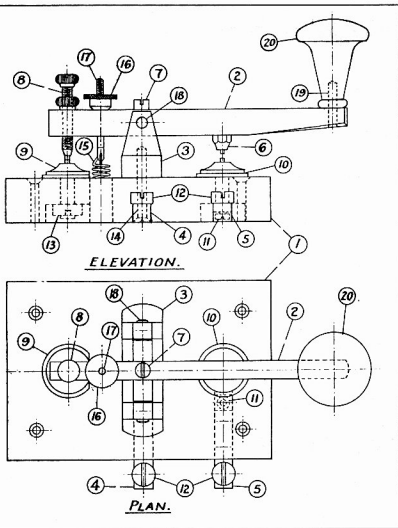
Michael also sent me a production drawing for a brass Morse key which we include here for interested readers. His original is full size but it has unfortunately had to be reduced here. Thanks Michael and the North Brisbane Radio Club.

A few evenings ago I was having a chat with Phil VK3CDU, on 3.520 MHz, a frequency where we can usually be found! These chats are becoming few and far between. We were having a little

laugh over some things heard during the recent contest, the CQ WW WPX CW Test. One particular station was calling frantically at about 35 WPM on 80 metres. Now, both Phil and I feel we are "pretty hot stuff" at receiving fast Morse, even with the computer switched off, but we commented that we had to listen to many repeats just to decipher the call sign. Admittedly, it did begin with a "K" so it was difficult to decipher the beginning from the end. Apart from the fact that, when someone finally answered at half his speed,

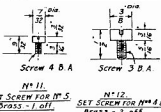


Morse Key — General Arrangement and Assembly Details.



ELEVATION.

PLAN.



he did not QRS. We wondered at his operating strategy. We gathered that, assuming only 40 percent of amateurs could copy him, is he only going to score 40 percent of his possible score in the test? Or, is he assuming that 80 percent of amateurs will not be in the test anyway? I will consider this further in the Novice contest and the RD this month.

Contesting is one thing, but when you are rag-chewing, you never know who is listening. Maybe someone out there wants to talk to you. How many of us send our call sign like we write our signatures — illegibly? How many times do we have to listen to a repeated call sign before we can unravel it enough to call the station? How often do

we hear the interestingly long code 'characters' such as dahdahdahdahdah? The secret of the telegraph code is timing. Each element — dit, dah and space must be proportioned reasonably well in order to be intelligible. And, unless the letters are separated by the proper space, how can we tell for sure what letters they are? Words run together put a heavy burden on the writer in order to decipher them, don't they? By contrast, the well sent, properly proportioned signals stand out like landmarks of clarity. Alf VK4QL, and Clive VK3QL, to name a couple of superb senders.

Let us look at the problem of distorted code a little more fully, and from the intelligibility aspect. Most of us can read sending where the dits are too fast for the dahs — that is, the dahs are disproportionately long. They are a little distracting but not incomprehensible. On the other hand, there are those who make their dahs so short that, at times, they sound like dits — and that is troublesome. We can misunderstand.

Whilst it can be annoying, the occasional misspelled word or abbreviation can usually be understood — and all of us slip up this way at times. It is no major stumbling block. And we sometimes send too many dits for characters like S, H and 5, also B and 6, etc. These are forgivable slips and, in most cases, can be understood rightly!

But it is lack of spacing of letters within words (and calls) and between words that cause most of our problems. Leave out the space between TT and it becomes M, similarly spacing errors can make ST sound like V (and vice-versa), G like ME, C like NN — and so the long list goes on. Does this happen because of wrong initial learning of each character as a distinct unit in itself? Or is it misplaced haste that leads to running letters together? Haste that leads to this only leads to unintelligibility.

Perhaps the commonest fault with spacing concerns the need to keep words separate. In sense, at times, that this is due to undue hurry to get the thought across. But, in so doing, the receiver is deprived of the key element in the reading and understanding — where each word begins. English is not an easy language to decipher when its word-beginnings are not marked.

Maybe, we can all profit from some drills (including new learners) in sending. Many years ago, Walter Candler recommended the following to help us develop a good timing sense.

Drill 1 — Send the letter S, counting the dits as you send it, then keep counting up to say 12 and without hesitation send a second S, and so on until you have sent 20 to 25 of them. Gradually speed this up by dropping out one count, until normal letter spacing is reached (the length of one dah). Try it with the letter O, etc. Both drills may be sped up as you send faster, keeping the same spacing proportions. Drill 2 — Take a simple sentence, sending it first with wider than normal spacing between the letters and words, and then gradually shorten these spaces to the normal length, being careful to keep the letters and words distinct. Eg, if a single dash represents longer spacing between letters and a double dash a longer spacing between words, it would go like this: g-o-o- d-s-p-a-c-i-n-g-i-s-e-a-s-y-t-o-r-e-a-d, etc. Then gradually bring it to normal.

A keyboard and an iambic keyer will always make perfect characters with proper proportions between and among the internal parts. What is sent may be wrong, but it will "properly made" wrongness! But with an ordinary hand key or semi-automatic key there will always be some evidence of one's individuality. Let us not let it get out of hand. After all, the purpose of the code is to convey intelligence not to present the listener with a puzzle.

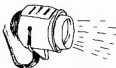
Let us not burden the listener with more than the QRM and QRN he is probably struggling with, by making our message garbled! As someone noted, well-sent code comes through interference much better than poorly sent code.

Reference: Wm G Pierpont N0HFF and MM

Finally, from Tony G4FAI: "There is a movement to obtain a no-age limit Novice licence in the UK which would permit Morse-only operation on the 10 metre band with a transmit output of five watts, preferably using inexpensive home-brew equipment. It is suggested that an eight week study course, covering theory and technical matters, at an appropriate level, could be followed by a two hour examination set by the RSGB, and Morse test at five word-per-minute, conducted by local amateurs. The secretary of the campaign is Ian Mabel G333W, who says: "The idea has the support of the G-ORP Club, the Scouts, Sea Cadets, the RSGB and a number of radio amateurs. Further information is available from Ian at 52 Hollytree Ave, Malby, Rotherham, S66 8DY, England."

73, Gil VK3CQ

Hamads are a free service to members. See page 64 for details of how you may make use of this service.



Spotlight on SWLing

Robin Harwood VK7RH

52 Connaught Crescent, West
Launceston, Tas. 7250

Well, almost three-quarters of the year has passed and it certainly has been different this year from last time around. Conditions seemingly improved and it has been officially confirmed that we have turned the corner and are into a new sunspot cycle. In mid-May, the sunspot count rose to 50 on one occasion, before dropping back to 14, early in June.

Incidentally, Radio Australia now has a daily propagation report and forecast at 0425 UTC, which is repeated every four hours until 2025 UTC, except Sundays. A weekly propagation summary is included in Talkback. The report is presented by Mike Bird, in co-operation with the IPS and Space Services in Sydney. It includes the solar flux, the A index and the geomagnetic indicator — the K index for the previous 24-hours and also the predictions for the next day. This service has helped me to keep track with daily propagational conditions and RA is to be congratulated on extending this daily service to professionals and amateurs alike.

Winter-time conditions have been particularly fascinating this year, compared to 1986, although I have moved QTH, which probably has made the difference. The 41 and 49 metre broadcasting allocations have been especially interesting around our local lunchtime; ie 0200 UTC. Many European signals are being easily heard and logged. Yet, the surprising signal has come from an unexpected area in Bolivia, in central South America. *Radio Panamericana* is a low powered station on 6.105 MHz, from La Paz. It has been observed at 0250 UTC with typical Latin music and there was full identification frequently given on the hour, during a news bulletin. The station was on a split channel, but unfortunately no other European signals were co-channel this day. I hastily wish to add that this station was not

present every day, yet it is unusual as Latin Americans do not come in normally until much later. For example, around 0500 UTC, which is about sign-off time. There are some who operate 24-hours as *Radio Union* in Lima, Peru. It is on 6.115 MHz and is well heard when Europeans fade-out at sunset and before *Radio Tarpa* in Tokyo comes up.

And, while we are on domestic shortwave relays, an era in Australian broadcasting history came to an end on June 12, when VLR and VLH, in Melbourne, closed down for the final time. These stations relayed the ABC domestic programming to the Inland and the Pacific. They have been on-air since at least 1934. These became redundant with the introduction of AUSSAT relays of domestic radio networks to the same service areas.

Also, the Lyndhurst site was being phased out. So a faint voice on 6.680 and 6.150 MHz in this part of the world, closed down. Only VNG, at Lyndhurst, remains and this is also in doubt.

There has been no word yet about the other ABC shortwave relays of domestic programming from either Perth or Brisbane. I would not be surprised if the Western Australian relays went the same way as VLH/VLR. The Brisbane relay services tropical areas, where long distance MW reception is impossible due to high static levels at times.

Also, my spies reliably inform me that the ABC Metropolitan Network (2BL, 3LO, 4QR, 5AN, and 7ZR) will likely be permanently operational for 24 hours from August 1. This will make it more difficult to obtain any worthwhile MW DX, without resorting to MW loops, is it a question of time before the Regionals follow suit?

Some of you may not be aware that the BBC World Service has been recently relayed through

the RA Shepparton site. The target is Fiji and has been on 15.393 MHz from 2200 to 0300 UTC. This may be only a temporary arrangement. Unfortunately, reception of this service was not good in Northern Tasmania due to the presence of a VOA relay from the Philippines, in Chinese being co-channel. The back-radiation effectively masks the signal, although I am only a few hundred kilometres from Shepparton.

I also believe that the Spanish Foreign Radio has recently signed an agreement with Costa Rica, to construct and equip a shortwave station, which will, reportedly, be jointly shared by RFE and a Costa Rican external service. Also, new relay bases for International broadcasters should be shortly on-air. One in Arava, Israel, is to be jointly shared by Kol Israel and the VOA/Radio Free Europe. It is not hard to guess where the target area is. Another BBC relay base should be fully operational next month. This is in Hong Kong and will relay World Service programs to North and east Asia, as well as Asian language services. The two senders should put good back-radiation to this region. Keep an ear on 15.280 MHz, in our daytime and 7.185 MHz in the evening.

There is a new compere on the RA Talkback program, on Sundays. He is Roger Broadbent, ex-Radio Netherlands, Media Network. He replaces Brendan Teller. Talkback is heard at 0310, 0710, 0910, 1230, 1610, or 2040 UTC, on Sundays.

This month, the Remembrance Day Contest is also held. The rules were published last month so I am not going to duplicate the information. Many SWLs and DXers become involved in this annual contest which is held in memory of those amateurs who paid the Supreme sacrifice in World War II. All the very best of luck and good listening!

—Robin VK7RH



Education Notes

Brenda Edmonds VK3KT

FEDERAL EDUCATION OFFICER
PO Box 883, Frankston, VIC 3199

The final WIA submission to DOC about Amateur Operator Certificate of Proficiency examinations is published in this magazine, and copies also have been circulated to those that had input to the decision making. Once again, thanks to all who assisted.

It is of course not possible to please everyone in a situation such as this. The stand the Institute took was based on the firm belief that the system suggested would be the most efficient and effective for members and for the future of the hobby as a whole.

Whether or not the Institute is granted sole accreditation, there are a number of steps which must be taken as soon as possible.

We see the completion of the Study Guide at both levels, and the preparation of a Question Bank for producing sample examination papers as tasks that will be of great benefit both to students and to those who are assisting them.

In addition, liaison with DOC with regard to these items should further stabilise the standards of examinations in the approach to the development.

The NAOCF Study Guide requires only some minor negotiation with DOC before it can be published. It has been in use in a few classes this year for trialling. But the AOCP/AOLCP Guide is a long way from completion. It is my intention, however, to prepare a first draft from the syllabus myself and then circulate this for comment to those who have expressed interest in it.

I already have names of some members who are prepared to be part of the Education Committee decreed by the Convention. I would be very pleased to hear from any others who are willing to write, criticise or amend questions, or to criticise or amend sections of the Study Guide. I am sure

there are many members with experience in the technical or educational fields or in helping newcomers into the hobby. All I am asking is some time to read and make comments on material posted to you, and sufficient enthusiasm to return the comments to me by mail. I do not see any need for meeting in person.

If you are interested please drop me a note to the above address.

Recent discussions have raised the possibility of changes to licensing procedures and privileges for various grades of licence. A number of proposals have been aired, all with the common aims of increasing recruitment into the hobby or maximising use of permitted bands. It was pointed out by a DOC representative at the Convention that amateurs accept as a right their access to a considerable amount of spectrum for which commercial users would be prepared to pay thousands of dollars in licence fees.

How do we justify our continued occupation of our allotted bands? It is, perhaps, time for a bout of introspection to decide where the hobby should be going over the next few decades.

Whatever happens with the development proposals, most amateurs accept and uphold the idea of entry by examination, although there are perennial complaints about standards of the examinations.

Most also accept that the examination content should be related to the privileges of each class of licence, if privileges are extended, the syllabus must be extended to take this into account.

IMPLICATIONS

If Novice licensees are to be permitted to operate on the two-metre band, they should be examined on FM, repeaters, VHF propagation and antennas, etc.

But what do we have to add to the AOCP syllabus to cover the vast proliferation of modes such as packet, digital and computer generated transmissions?

Should holders of existing licences be examined on new modes or techniques, before being allowed to use them on air?

Hands up all those Old Timers who are operating Solid State equipment but who were not examined on transistors or FETs let alone ICs or logic gates.

The DOC will maintain surveillance over examinations for a long time yet, and changes to procedures or privileges will only come about by negotiation between the Institute and DOC. But there is room for discussion and consideration of the new ideas which are appearing on the scene. It is to be hoped that the debate will consider long term effects, and the over-all good of present and future amateurs.

The Institute has established a Committee to consider "The Future of Amateur Radio," intending it to discuss the range of possible options and the implications thereof on both a national and international scale. The committee cannot predict future scientific breakthroughs, or changes in international relations, but will be expected to investigate some of the recent proposals for change, and recommend directions along which developments should proceed. The committee has a very broad brief, but it could well play a very important part in shaping Institute policy and action.

My best wishes to those sitting for the August examinations. Remember, **READ THE QUESTION, AND ALL the answers.**

73, Brenda VK3KT



AMSAT Australia

Colin Hurst VK5HI

8 Arndell Road, Salisbury Park, SA, 5109

NATIONAL CO-ORDINATOR

Graham Ratcliff VK5AGR

INFORMATION SITES

AMSAT AUSTRALIA

Control: VK5AGR

Amateur Check-In: 0945 UTC Sunday

Bulletin Commences: 1000 UTC

Primary Frequency: 3.685 MHz

Secondary Frequency: 7.064 MHz

AMSAT SOUTH WEST PACIFIC

2200 UTC Saturday

14.282 MHz

Participating stations and listeners are able to obtain basic orbital data, including Keplerian Elements from the AMSAT Australia Net. This information is also included in some WIA Divisional Broadcasts.

ACKNOWLEDGMENTS

Contributions this month are from UoSAT Bulletin Board, VK5AGR BBS and Bob VK3ZDB.

OSCAR-10 TRANSPONDER SCHEDULE CHANGE (June 1, 1987)

Until further notice — OSCAR-10 will be available for communication at the following times (Mean Anomaly in MA/256):

May/June MA30...MA220
June 8 to July 20 MA20...MA250
July/August MA40...MA220

In the period of June 8 to July 20, the transponder of OSCAR-10 could be used between MA20 and MA250. Beyond these MA-times the satellite is in an eclipse and use of the transponder is absolutely forbidden. Users are strongly requested to use minimum necessary Uplink Power, especially when the satellite is around perigee. Best sun-angle (100 percent illumination) is to be expected around June 29.

After previous observations of the beacon and transponder signals, we conclude that now the OMNI-Antennas are switched ON instead of the

HIGH GAIN Antennas, which were present for a long time before. The schedule expansion above will allow users to communicate via OSCAR-10 under the presence of extremely good signals. Due to the OMNI-Antenna, the signals around apogee and best MA-Squint are currently somewhat low.

The switch-over was caused by one of the computer crashes, which sometimes occurred when entering/leaving the eclipse with total loss of power due to a BCR/battery problem. The last seems to be fixed recently.

Good DX and 73 de Peter DB2OS, OSCAR-10 Command Station and Co-ordinator.

UOSAT-OSCAR-11 BULLETIN-090 (June 11, 1987)

UOSAT MISSION CONTROL CENTRE
University of Surrey, Guildford, Surrey, England

UOSAT OPERATIONS

(de G3VJO)

UOSAT-1 was returned to normal operations on 060687 following an operator error that occurred in April. The resolution of the problem required six weeks of concerted effort using the UHF uplink. A new version of the 'Diary' for UO-9 has been written by Steve Holder at UoS, which should both avoid this problem in the future and considerably enhance spacecraft operations. Whilst this new 'Diary' was being checked out, CCD image data was transmitted continuously on 090687 and 100687, interspersed with 'standard' telemetry. UO-9 should resume normal scheduled operations by 120687 under the control of Chris Payne GIVRF.

UO-9 HF BEACONS

Following reports since Christmas that the 21 MHz beacon on UO-9 was no longer being heard by

stations, diagnostics on the experiment were carried out this week. These showed the beacon to be operating normally. Subsequently, the beacon was tracked (transmitting CW telemetry at 10 and 20 WPM interspersed with a steady carrier) on several passes on 090687 by G4VRC, at UoSAT. Reports on reception of this beacon would be most welcome.

UoSAT-2

CCD — several new images have been collected from the UO-121 CCD imager and are under analysis by Jacky Radbone at UoS.

RADIATION — surveys are planned for July to explore transatlantic propagation anomalies at 50 MHz.

FO-12 TELEMETRY NEEDED

The JARL needs FO-12 PSK telemetry data of the satellite when it is in eclipse. If you obtain telemetry frames where channel No 1 indicates 000, please relay the data to any official AMSAT Net station for relay to JARL. (de ANS).

AMSAT TECHNICAL JOURNAL AVAILABLE

AMSAT Technical Journal Editor, Bob Diersing NSAHD, has completed work on the first edition of the AMSAT Technical Journal. The Journal contains a collection of first-rate technical papers from AMSAT experimenters world-wide. It should provide the advanced satellite user with new data and ideas, as well as giving the "normal" user a look at the state-of-the-art engineering which makes the Amateur Satellite Program important and possible. (de ANS).

Journals must be ordered directly from AMSAT-NA Headquarters, addressed to AMSAT-NA, PO Box 27, Washington, DC 20044, USA.

RS NEWS

Russian sources say the launch will not occur in June and that additional modifications of the RS-9

SATELLITE ACTIVITY FOR THE MONTH OF APRIL 1987

1. LAUNCHES

The following launching announcements have been received:

INTL NO — 1987	SATELLITE	DATE	NATION	PERIOD min	APG km	PRG km	INCL deg
830A	Kvant 1	Mar 31	USSR	89.2	329	177	51.6
831A	Cosmos 1834	Apr 08	USSR	92.8	443	413	65.0
832A	Cosmos 1835	Apr 09	USSR	90.7	367	180	65.0
833A	Cosmos 1836	Apr 18	USSR	88.2	313	188	65.0
834A	Progress 29	Apr 21	USSR	98.7	255	190	51.6
835A	Cosmos 1837	Apr 22	USSR	88.7	255	190	51.6

2. RETURNS

During the period 30 objects decayed including the following satellites:

1982-007A Cosmos 1235 Apr 05
1987-023A Progress 29 Mar 28
1987-025A Cosmos 1826 Mar 25

3. NOTES

1987-028A — Raduga 20:

Orbital parameters are period 14365.6 min, apogee 35827 km, perigee 35766 km, inclination 1.2 degrees.

1987-029A Palapa B-2P:

Orbital parameters are period 1449.1 min, apogee 36952 km, perigee 35129 km, inclination 0.1 degree.

1987-030A Kvant 1:

The astrophysical module spacecraft (quantum) successfully docked with the orbiting manned space complex Mir on April 12, 1987. Experiments in the field of extra-atmospheric astronomy will be carried out on board by means of the orbiting observatory "Röntgen" and the ultra-violet telescope "Glazur" and also to obtain batches of superpure biologically active substances in weightlessness. Research will be conducted on X-Ray radiation sources over a wide range wavelength, stars of various spectral classes, and galaxies in the ultra-violet part of the spectrum.

1983-041A GOES 6:

1987-022A GOES 7:

GOES 6 and GOES 7 will be known as GOES West and GOES East respectively once they have been maneuvered into their permanent positions. GOES East orbited at 75 degrees west and reached its permanent station on March 24, 1987. GOES West will orbit at 135 degrees west and will arrive on station on or about April 28, 1987.

—Contributed by Bob Arnold VK3ZDB

OSCAR-10 APOGEES — AUGUST 1987

APG SATELLITE	BEAM HEADINGS									
	APOGEO-ORDINATES					SYDNEY				
DATE	DAY	ORBIT NO	UTC	LAT DEG	LONG DEG	EL DEG	ADL DEG	EL DEG	ADL DEG	EL DEG
AUG	NO		HH:MM:SS							
1987										
1	213	3107	0103:14	20	270	303	2	312	10	330
2	214	3109	0022:08	20	261	309	8	319	15	340
3	215	3111	2341:01	20	252	316	14	328	20	351
4	216	3113	2259:54	20	242	324	19	337	24	2
5	217	3117	2137:40	20	233	334	23	347	26	13
6	218	3119	2058:33	20	224	334	26	358	27	24
7	219	3121	2015:26	21	214	354	28	9	27	33
8	220	3123	1934:18	21	195	15	26	28	21	49
9	221	3125	1853:12	21	186	26	33	37	17	56
10	222	3127	1812:05	21	176	35	19	45	11	61
11	223	3129	1730:58	21	167	43	14	52		
12	224	3131	1649:50	21	157	50	8	58	-1	
13	225	3133	1508:44	21	148	56	1			
14	226			21						
15	227	3138	0225:57	21	304					304
16	228			21	295					311
17	229	3140	0144:50	21	285					318
18	230	3142	0103:43	21	265		302	-1	318	15
19	231	3144	0022:35	21	246	5	289	5	326	20
20	232	3146	2341:29	21	227	306	3	316	11	335
21	233	3148	2300:22	22	257	313	9	323	16	345
22	234	3150	2219:15	22	248	320	15	332	20	356
23	235	3152	2138:07	22	238	329	19	342	24	7
24	236	3154	2057:01	22	229	338	23	352	25	17
25	237	3156	2015:54	22	219	348	25	2	26	27
26	238	3158	1934:47	22	210	359	26	24	36	19
27	239	3160	1853:39	22	201	9	26	22	22	44
28	240	3162	1812:33	22	191	19	24	31	18	50
29	241	3164	1731:26	22	182	29	20	40	10	56
30	242	3166	1650:19	22	172	37	16	47		
31	243	3168	1609:12	22	163	45	10	53	2	
32	244	3170	1528:05	22	153	51	4			

systems are under way. These could affect the modes of operation as well as the frequencies.

RS5 and RS7 will be available for use on the 10th orbit of each day, except Wednesday through to June 30, says PADLO. Then, from July 1 to July 25, both will be available for use on the ninth orbit of each day, except Wednesday. Both satellites are in poor condition with their batteries virtually useless after six and a half years in orbit.

GIOR reports that the Mir Amalfur Radio Experiment is not imminent. Reports to the contrary have been unduly optimistic. The most recent achievement has been the completion of the transceiver to be used. This may have sparked recent speculation that MAREX activity was at hand.



Australian Ladies Amateur Radio Association

ALARA-MEET

For those wishing to attend the ALARA Get-together in Adelaide, and have not registered yet — **time is running out!**

Do not delay any longer, get your registration to Maria VK3BMT.

SURPRISE FOR MARILYN

As everyone is probably aware, our President, Marilyn VK3DMS, is a very hardworking lady, so when her 50th birthday arrived, OM Geoff sent her off to Melbourne for a week to enjoy a well deserved holiday.

Marilyn had a great time shopping, touring stamp shops (philately is one of Marilyn's hobbies), and visiting friends, including Mavis VK3KS and Bron VK3DYF. More was to come.

On the Friday, Marilyn arrived, with her brother, at her sister-in-law's house, and was very surprised and delighted to find about 20 people (including OM Geoff), who had been sitting patiently in the dark awaiting her arrival. Her surprise party was enjoyed by one and all, especially Marilyn.

Marilyn's interest in radio began in 1971, when she became Official Communications Officer for the Cockatoo Bushfire Brigade. In 1974, she moved to Pooncarie, where Marilyn and Geoff ran the local Post Office and Telephone Exchange. In 1975, when bushfires caused havoc in the area, they became involved with SES radio, teaching and establishing a network in the field. They ran the SES radio as a base station until they left in 1978.

Geoff achieved his amateur licence in 1977, and Marilyn began to join the LARA nets with Geoff at her side.

When they moved to Mildura, she found herself quite lost without radio, and determined to do

something about it. She joined the 1979 class, and gained her novice licence in May 1980, followed by the limited in September, and a full licence in December of that year. Certainly a busy year for Marilyn.

Since then she has made more good friends than she ever had before, and enjoys amateur radio very much.

Last year, she became President of ALARA, a position she fills with flair and aplomb.

We wish you many more years enjoyment of amateur radio Marilyn.

YL ACTIVITY DAY

YL Activity Day was formulated by Diana G4EZI, some years ago as a "Let's get together on air" idea.

Recently, due mainly to poor propagation, fewer YLs have been heard, but with the beginning of the next solar cycle we may soon be able to catch up with some of our DX friends, renew old acquaintances and make new ones. YL Activity Day is a good place to begin.

YL Activity Day — sixth of each month.

Listen on the hour UTC (ie after 2400 UTC during our winter, for 24 hours).
Phone: 3.588, 14.288, 21.188, 21.388, 28.588, and 28.688 MHz.
CW: 3.530, 14.058, 21.058, 21.133, 28.088, and 28.133 MHz.

KEN MCLACHLAN VK3AH

After several years as DX Editor for *Amateur Radio*, Ken VK3AH, has decided to call it a day, (see July AR).

If you are wondering what you are doing in the ALARA Column, Ken, you are here because we would like to wish you well for the future, and thank you for your support of, and assistance to, ALARA on so many occasions.



Fl.Diag.E

Formed in 1981 in recognition of the special knowledge and skills required by persons involved in fault diagnosis, plant management maintenance and problem solving.

At the present, admission is based solely on competence and capability without regard to age or academic attainments.

To obtain further particulars send fully stamped and addressed envelope to:

Malcolm Tulloch
INSTITUTION OF DIAGNOSTIC ENGINEERS
P.O. Box 419, Ringwood, Vic. 3134.
Australia 161. 24 Sammit Crescent, North Ringwood.

Joy Collis VK2EBX
PUBLICITY OFFICER, ALARA
Box 22, Yeoval, NSW. 2868

NEW MEMBERS

A warm welcome to Rose SM5HYL and Jeanette VK4BZL, ex-P29ZL. Great to "have you aboard."

REGARDING RADIO SHACKS

And, of course, every ALARA member has one, whether it be a spacious room filled with all the latest gadgetry or a modest transceiver on the end of the kitchen bench.

Sometimes the shack is shared with the OM or other family members, sometimes not.

This is my radio shack:

I have a little radio shack beside the attic stair, There's a curtain on the window, there's a comfortable chair.

Certificates and QSLs adorn the white brick wall, And I am running out of space in which to put them all.

My HF rig is on the bench, with log books strewn around, And a box of bits and pieces 'neath the cupboard, on the ground;

Odds and ends that may be useful in some future great home-brew, When I have the time to so the things I've always wanted to.

There are coils and resistors, (some are old and rather bent),

And a Morse code oscillator, (Well! I wondered where that went)

There are diodes and condensers and an ancient valve or two,

Insulation tape, and solder, and half a tube of glue.

Shelves bulge with books and magazines,

catalogues by the score, A large world map is hanging on the wall beside the door.

Pens and pencils in a box, (the writing I don't shirk),

But the pen I grab is always the pen that simply will not work,

My little Morse key is ready to transmit each dit and dah.

There are meters, filters, tin-foil and some thumb tacks in a jar.

I've a floppy cushion at my back, a cat upon my knee,

Yes, this tiny room is really such a pleasant place to be.

And in my little radio shack the world is close at hand,

So many different accents as I tune around each band,

But — shock and horror! The OM's voice drifts through the open door

"I think we'll clean this room right out and use it for a store!"

'Bye now, 73/33, Joy VK2EBX

Club Corner

PORT AUGUSTA AMATEUR RADIO CLUB AWARD

The Port Augusta Amateur Radio Club is launching a new award to celebrate their first birthday.

On the weekend of August 8 and 9, the club will be celebrating its first birthday. Amateur who contact the club station, VK5AUG, from 0930 UTC on the 7th to 0730 on the 8th, will be eligible to obtain the award. On application for the award, which only requires a log extract and \$5, the award will be posted. As a birthday present for this occasion, the recipient will be eligible to win a power supply transformer rated at 18 volts, 10 amps continuous or 16 amps peak. The winner will be announced at the monthly meeting on September 11.

Shortwave listeners can also qualify for the award by logging the club station.

Those who qualify for the award during the birthday weekend will receive a multi-coloured certificate.

The award will still be available after the birthday weekend but it will be necessary to work the club station, plus four member stations. Shortwave listeners will qualify by logging the club station and four member stations. Application details will remain the same, however the award will only be monochrome.

For applications for the award or further information contact the Awards Manager, C W McEachern VK5KDK, PO Box 360, Port Augusta, SA. 5700.

—Contributed by C W McEachern VK5KDK, Awards Manager, PAHAWZ

VICTORIAN WIA WESTERN ZONE

A meeting of the above Zone will be held on Saturday, August 22, 1987, at the Lake Bolac Hotel, from 1.30 pm.

The following notice of motion has been received and will be discussed at this meeting. "Unless funds are received prior to the August meeting to allow the Zone to operate satisfactorily, all activities of the Victorian Western Zone will be suspended."

—Contributed by Jim Wright VK3CFB, Secretary, WIAWZ

VK4 DISABLED PERSONS RADIO CLUB

To celebrate the fourth anniversary of the opening of the VK4 Disabled Persons Radio Club, an activities day will be held at the residence of Roley Norgaard VK4AQR, on Sunday August 30.

The club station, VK4BTB, will be on the air from 0001 to 0600 UTC (10 pm to 4 pm local time). This period is likely to be extended according to the availability of willing operators.

Intended frequencies for use on the day are 3.580, 7.080, 14.190, 21.190 MHz as dictated by time and conditions.

The station will be off-air from about 4000 to 4300 UTC as the formal part of the day will take place at this time.

Paul Bell VK2VJR, has offered to help promote the day by making a donation in the form of a prize. All people participating, including those making radio contact, will be eligible to win this prize and it is anticipated to announce the winner on 3.580 MHz at about 0600 UTC.

Further inquiries can be made by contacting the club on their regular Friday Net, which commences at 0900 UTC, on 3.580 MHz, or by contacting Roley VK4AQR, on (076) 96 7587 or Graeme VK4NYE, (076) 30 8323. Both are QTHR.

All members of the club look forward to making your acquaintance on the day.

—Contributed by Roley Norgaard VK4AQR, Station Manager for VK4BTB

WAGGA CONVENTION 1986

How better could one spend a spring weekend out amongst the birds and bees in the country, than by attending the 1986 Wagga Convention, last October.

A large "roll-up", similar to past years, began gathering in Wagga on the Friday night with an almost certain guarantee of perfect Riverina weather. Fortunately for all, the guarantee came good and almost perfect weather prevailed for the whole weekend. So much so in fact, that this year's organisers of the annual event are almost

ready to come up with the same guarantee for Wagga 1987, in October.

Back to 1986, visitors were treated to a wide range of displays and general activities that kept everyone involved over the weekend. Apart from the usual field event contests, etc, there was a



Stan VK3BSR, from Bail Electronic Services, shows Kevin VK2ZKV, the latest in Morse keys.



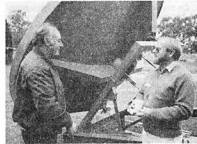
Peter VK2DOL, with his ATV display.



From left: Peter VK2KZZ congratulates joint winners of the 70 cm Yagi (donated by ZVZ Antenna Farm), Graham VK2HI and Peter VK2DOL.



Sid VK2SW (left) and Tony VK2ACV, check the old components table.



Doug VK2ZMP enjoys a chat with Phil VK1YS.



Russ VK2AZR, with a proper "wireless set."



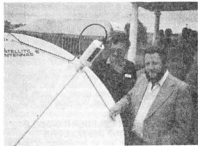
Dave VK2ZYE, loading his dishes after the convention.



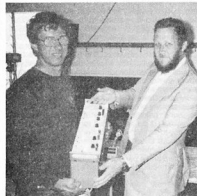
Enjoying a chat, from left, John VK2AQ, Russ VK2AZR, Harry VK2AEC and Rex VK2YA.



Jeff VK2KCL, receives his prize of a satellite dish (donated by Satellite Antennas Pty Ltd), from Roger VK2ZTB.



Wagga Club President, Peter VK2KZZ, and Roger VK2ZTB, inspect the working satellite television display.



Jeff Pages VK2BYY, receives his prize, a laboratory power supply (donated by Scientific Devices), from Roger Harrison VK2ZTB.

good variety of trade displays coupled with many working demonstrations of very interesting amateur and commercial activities. Among the working displays were such items as 70 cm ATV complete with a special "outside Broadcast" of one of the field contests. There was also displays of actual, working slow-scan television. Intelsat showing American television, and AUSSAT was well represented with actual off-air pictures.

A Wagga Convention would not be the same without a vintage radio display giving visitors the opportunity to travel back in time to the days of valves, large resistors, mammoth inductors, heavy relays and plenty of brass things — no plastic or multi-legged fuses — always a popular exhibit.

The Saturday Night Official Dinner also proved a great event at the local Australian Rules Club. A capacity house enjoyed a variety of entertainment including an address by the convention guest, Roger Harrison VK2ZTB.

In all, a very good weekend for amateurs and their families who had, collectively, travelled thousands of kilometres from SA, Vic, Qld and NSW. This years event is also shaping up to be one not to be missed. Club members hope to see all the old friends and new ones in Wagga this October.

—Contributed by Jeff Lange VK2EJJ **BT**

AUSTRALIAN GOVERNMENT
Department of Science



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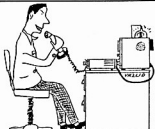
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"I've got the rig upside-down — I think all the DX has sunk to the bottom!!!"
—VK2COP



"I'm putting 1 kW into a — whoops — I mean I'm running 400 watts into a three-element Yagi!"
—VK2COP

TAKING TWO METRES BY STORM

Icom (Australia) Pty Ltd has announced the arrival in Australia of a transceiver destined to take the two metre band by storm. With the imminent granting of two metre FM privileges to Australian Novice operators, with a subsequent major increase in activity on that band, specifications for two metre transceivers will become even more critical than at present. The IC-275A two metre transceiver is well positioned to become the 'bench-mark' for two metre base/mobiles under these new, more crowded conditions.

Until now, the only truly 'top-spec' two metre all-mode transceiver available in Australia was the IC-271A. For all its superb specifications and features, it has one minor drawback. It cannot be taken away from the 240 volt mains supply. In the IC-275A, Icom has overcome that 'shortfall' providing comparable features and specifications in a unit as flexible as the active amateur who uses it — the unit runs on 13.8 volts DC and can be fitted with an internal 100 percent duty cycle power supply (IC00S25) for mains operation.

In some ways, the IC-275A is superior to its highly-rated predecessor. The inclusion of Icom's most recent engineering development, the Direct Digital Synthesiser (DDS), makes the IC-275A unique. DDS is the logical successor to the (aging) Phase Locked Loop (PLL) frequency synthesis system and completely replaces all PLL circuitry with an advanced computer-designed, digital synthesis circuit that provides extremely fast (five ms) lock-on to selected frequency, fast RTT switching for packet radio and AMTOR modes, and superb frequency stability through the mixing of DDS-generated source frequencies in an advanced double phase-locked loop system.

And, that's not all that's new — the HD84B180 ROP central processor unit (CPU) in the IC-275A provides 99 user-programmable memory channels storing frequency, mode, duplex direction and offset, and, where used, subaudible tone information. The CPU also provides advanced remote control functions via a rear-mounted RS-232C jack operating at 1200 baud, allowing computer control of VFO, frequency and mode selection, and memory data via an appropriate interface.

Four separate scanning functions provide easy automatic monitoring of selected band segments or the entire two metre band. Memory Scan automatically cycles through each of the 99 memories, with stop on busy or stop on clear. Mode-Selectivity memory scan allows selective scanning of only those memories containing the same mode as the VFO in use. Programmed Scan repeatedly scans a user-programmed segment of the band. Skip Scan allows automatic scanning of only selected memory channels, regardless of mode.

The newly designed liquid crystal display (LCD) uses a soft orange illumination for maximum display visibility, even in a bright environment. The display unit provides constant monitoring of the VFO in use, selected mode, split or offset, scan data, memory channel, RTT offset, subaudible tone data and operating frequency.

User enhancements include IF passband tuning (PBT), deep notch filtering, noise blanking, selectable AGC and speech compression. Optional add-on modules include AG-25 multi-mounted preamplifier (with front-panel control), UT-36 voice synthesiser for mobile or sight-impaired use, UT-34 tone squelch unit for 'quiet base' type operation, CT-16 satellite interface for common control of the IC-275A/H and its 70 cm companion, the IC-475A/H, CT-15 AQS adaptor for full access to the Amateur Quinimatic System, FL-



83 CW narrow filter providing 500 Hz selectivity at -6 dB, and the CR-64 high-stability crystal unit providing stability of 0.5 ppm within the operating temperature range of the transceiver (normal stability is 5 ppm).

For advanced mode applications, the IC-275A is provided with an easily accessible rear-panel AFSK jack for RTTY, Packet or AMTOR use and a Data switch to reduce transmit/receive switching time to an incredible 0.005 seconds.

The IC-275A/H is on display now at authorised Icom dealers. For more information and specifications, contact your local dealer or Icom (Australia) Pty Ltd, 7 Duke Street, Windsor, VIC 3121.

TEST RIG FOR CELLULAR MOBILE TELEPHONE INSTALLERS

If it was necessary to test an installation of one of the newer Cellular Mobile Telephones, you may have had trouble — until now! Call Me Communications of Parramatta are selling a completely Australian built and designed SWR/Power meter that accurately measures power and SWR in the 800-900 MHz region where these exotic radios transmit.



Designated model 03-801, the meter is designed for installers who need a rugged instrument to check antennas and cabling. A very detailed instruction manual is included, which takes the operator step by step through the various procedures and checks, and even diagnoses likely reasons for various difficulties.

For further information and specifications of the 03-801 SWR meter contact Call Me Communications, 28 Parkes Street, Parramatta, NSW. 2150. Phone (02) 633 3545.

✻

EMI FILTERS

Most EMI filters fitted to electronic equipment are normally an integral part of the socket, the power switch being located elsewhere.

A new product recently introduced by J A Severn is a composite power line socket module that includes both filter and switch. The socket is a standard three-pin IEC connector suitable for 250 volts AC and the switch is capable of switching six amps. Common mode insertion loss at 10 MHz is claimed to be greater than 40 dB and, in normal mode (line-to-line) greater than 60 dB. The module is designed for panel mounting and standard connection is by 6.3 mm Quick-Connect terminals.

Details of the EMI 7103 series power line socket module is available from J A Severn Pty Ltd, PO Box 129, St Leonards, NSW, 2085. Ph: (02) 957 6455.

HALCYON DAYS

Do not miss the latest work by Alan Shawsmit VK4SS, the WIA Old Division Historian. This book is a condensed story of VK4 history up to WWII and runs into 178 pages and approximately 45 000 words. It contains over 100 photographs, illustrations and early documents. There are 200 thumbnail biographies of pioneers and experimenters, revealing all kinds of facts about them which are mostly forgotten.

Read about the near fate of the WIA in 1929 — will history repeat itself in a few years? What was the QRTL and who were the men who took over the displaced WIAQ and became its presidents? When was the first Australian VHF record achieved in VK4? Who were the HF DXers who broke QRP world records and what was the state of the ionosphere during this period? Also, what were the developments that began to turn the world into a global village? Why did the many flourishing private clubs suffer an almost total demise by WWII? Why was the Observatory Tower the most significant amateur shack in Queensland, possibly Australia? Did you know there were over 250 radio magazines and journals available in Australia pre-WWII? Could you pass a 1930s AOCPC examination and what do you know of the modus operandi of the period? ... All these and 1000 more facts can be read in *Halcyon Days*.

Only one print run is possible and a sell out anticipated — so don't miss out! Advance mail orders, personally autographed by Al VK4SS, can be obtained at a specially reduced price.

Halcyon Days is a full-sized quality product, professionally presented, ideally priced to suit the amateur's pocket and the first of its kind in Australia. It is no heavy, dull tome but is written in a easy-to-read, light style, an sprinkled with humorous anecdotes — guaranteed to raise a laugh and inform at the same time. A book not to be missed and a perfect gift for a radio friend.

It is expected to be available, straight from the presses, by September.

Order now from the WIA Old Division Bookshop, GPO Box 638, Brisbane, Qld, 4001, or contact Anne VK4KZX on (07) 345 7768.

Pre-production price ending August 21, 1987.

\$9.25.

Post-production price after August 31, 1987.

\$12.00.

✻

VK3 WIA Notes



NEW MEMBERS

The following applicants are welcomed to membership of the WIA, VK3 Division.

Ronald Adams, Ian Bevan, Gary Carlson VK3KBL, A G Kneel VK3PKU, Dominic McLaughlin, Andrew Monkhouse VK3YAU.





VK2 Mini-Bulletin

THE RD CONTEST — 1987

Have you marked your calendar for the weekend of August 15/16? The rules were in last month's AR. If you are able to spend a couple of hours, or the full weekend, in the contest it will help VK2.

A reminder — the broadcast for this weekend changes. Instead of the usual morning session, it is replaced by a transmission at 5.30 pm on Saturday, August 15, which concludes with the opening address for the RD at 6 pm. The usual Sunday evening session is at 7.30 pm. After taking part, do not forget to send in your log. Have a good weekend, conditions permitting.

NOVICE DEBATE

As these notes were being prepared the discussion was still occurring on the possible extension of Novice privileges to include aspects of the two-metre band. The thanks of Divisional Council to the various clubs and members who have written with their respective thoughts. Because of the time delay in these notes, you are requested to keep in touch via the broadcasts or should you not hear these, then via the telephone news report on (02) 651 1489. The outcome of the discussions should have been conveyed to you by now, via the broadcasts or elsewhere within Amateur Radio.

While there has been a considerable response to this subject, and many amateurs have taken the trouble to indicate their point of view, which is most helpful in decision-making, it is disappointing that prior to the Federal Convention, only seven people attended a forum at Amateur Radio House, to discuss the agenda items. This topic is just one of many which requires input and ideas from every amateur at regular intervals.

WICEN

The WICEN Net conducted on the Sydney Repeater, VK2RWS, was scheduled to change the starting time to 9 pm early in July.

Coming events for WICEN include the Sun City to Surf on Sunday morning, August 9. The event is being co-ordinated by Brian VK2ZB, and is open to any amateur to assist. It is an exercise to enable non-WICEN persons to have a look at what goes on. The next major event close to Sydney is the Hawkesbury canoes over the weekend of October 10/11. Most local WICEN groups have exercises within their regions.

MAY AMATEUR RADIO

A problem occurred somewhere within the mailing distribution system which resulted in a large number of the May issue taking from 10 to 20 days to reach their destinations. Many members advised the office of the non-receipt of the magazine. In some cases, replacement copies were arranged, only to have the original arrive at the same time. Some members, when advising that

their copy had not arrived, voiced levels of concern about the magazine and its content. This was balanced by others saying how pleased they were with the improving quality of it in recent times. While the magazine has to cover and include a wide range of subjects, similar to a daily newspaper, not every subject will interest every reader.

Technical articles are important to any (technical) publication and should, where ever practical, come from within the membership. While there are many good articles in other magazines, they are not the same as your own. So, if you are working on something and would like to share the experience with others, why not send something along.

The other important function that a membership magazine like *Amateur Radio* provides is the written notification of changes and news to member. Whilst we are perhaps lucky (or different) in being a communications hobby where some information can be passed by the medium of radio, it is the printed word which is the only lasting record that can be referred back to as required.

Perhaps the halfway point in this is the mode of packet radio. Work is proceeding within the packet groups to link country regions. Recently, the Oxley Region installed their digi-repeater, VK2RPM 7575, which has extended the northern coverage from Newcastle. Work is proceeding to the south with systems being established to connect Sydney into the Riverina, via installations at Mittagong and Goulburn. These will link up with the VK3 systems to provide a circuit to Melbourne.

The Division is working towards having a packet bulletin board which can be accessed from this network. It will provide an information and reference source, including most items of the Sunday broadcasts, which are prepared on the word processor and read live from Dural. Further details when the system is on-line.

HOME-BREW

Are you currently building a project? Do not forget the annual home-brew contest. Entry forms available from the Divisional Office. You may collect one during the open hours of 11 am to 2 pm, Monday to Friday, or 7 to 9 pm, Wednesday nights. Alternatively, write to the PO address above or telephone (02) 689 2417, during these hours.

LICENCE RENEWALS

A reminder. It is almost a year since the NSW DOC placed their records on the SMSIS computer. Make sure that you have your licence renewed by its due date. Even so often we are finding a duplicated call sign in our records so the respective holders and the Department are advised. Between all concerned, the problem is sorted out.

Tim Mills VK2ZTM
VK2 MINI BULLETIN EDITOR
Box 1066, Parramatta, NSW. 2150

The next Conference of Clubs will be held in November. Clubs are reminded that agenda items have to be lodged at the office by September 11. Have you been looking for 810 triodes? The need still exists with the HF AM transmitters at Dural. On the subject of Dural, the fireworks evening in late May was an excellent night with an attendance of over 100. Do not forget the monthly BBQ, usually the first Sunday of the month — August 2 and September 6.

DECEASED ESTATE

The Division has been asked to offer the following for sale by tender on behalf of a Deceased Estate. Interested persons should submit their offer, in writing, to be received at the Divisional Office by August 21, 1987.

Item 1. Kenwood TS520 with DG5 display unit
Item 2. Info-Tech M-300C. RTTY/ASCII/Morse keyboard unit
Item 3. Info-Tech M-200F Converter to drive above keyboard (and video display).

NEW MEMBERS — FOR JUNE

A warm welcome is extended to this large intake of new members during June.

R E Barrie Assoc	Eastwood
C W Belton Assoc	Wheeler Heights
P Borrell VK2YBP	Randwick
B Bowler VK2XFS	Richmond
K J Burton Assoc	Wauchope
M R Cheeseman VK2XGK	Springwood
A M Ellsmore VK2FCO	Carlton
V Ficarra Assoc	Coniston
C Gooch VK2XCG	Baulkham Hills
J G Griffith VK2BGG	Wauchope
A N Herring VK2FVK	Manly
V Huzevka VK2AEA	Parramatta
M G Johnstone Assoc	Metford
P V Kelly VK2MCD	Urmah
G C Levitt	Valley Heights
G W McLennan VK2MBV	Kurri Kurri
B B O'Keefe Assoc	Mudgee
W R Phillips VK2MWP	Kooragang
J S Sharpe Assoc	Forsters Beach
J Siqueira VK2MCF	Haris Park
C A Smith Assoc	Jenolan Caves
E J Smith VK2EBY	Kiama
M W Smith VK2ZBAK	Kiama
T VU-Dinh VK2XGZ	Kingsford
N J Wadds VK2FFE	Port Macquarie
M J Wallace VK2ZWJ	Wauchope
G P A Worral VK2GPA	Gordon

SLOW MOTOR OPERATORS

This nightly session is provided by a group of operators on VK2BWI. Vince Roberts VK2CVR, is the co-ordinator who is on the look-out for additional operators. If you can assist would you call in after the session on 3.550 MHz.

Five-Eighth Wave



Jennifer Warrington VK5ANW
59 Albert Street, Clarence Gardens, SA. 5039

The questionnaire which you should have received in your July insert into AR will hopefully be collated by the time you are reading this. As soon as we have the results we will put them on the Sunday morning broadcast. However, they probably will not get into this column until the October issue, due to our lead times. Rest assured that we will publish them eventually.

At our May meeting, we were pleased to welcome Ron Henderson VK1RH, and Bob Roper VK5PU. Although Bob is a member of this Division, he is normally resident in the USA.

Also at that meeting it was my sad duty to announce the passing of Cam Patterson VK5KR, suddenly at Pieterbong. The usual period of silence was observed and we extend our sympathies to his wife and nine children.

I would like to thank John Anderson VK5ZFO, who has kindly agreed to take over the job of program Organiser. John knows a lot of people in a variety of technical areas and I am sure that from these he will be able to find us some very interesting speakers. However, if you have a suggestion for a speaker or topic I am sure that John would be very pleased to hear from you.

DIARY DATES

Tuesday, August 25 — Ross Forbes WB6GFJ, "An Amateur Radio/Tourist Guide to San Francisco" (illustrated with 35 mm slides).

(We have been very lucky in obtaining Ross as a speaker as he will only be in Adelaide a few days — our thanks to Graham VK5AGR, for this 'coup' — don't miss out on this rare opportunity to hear Ross).

JUBILEE 150 AWARDS

1393	YB3EUO
1394	C53FH
1395	Y0CEFC
1396	YD2DGO (as SWL)
1397	YD2HZH (as SWL)
1398	VK3YH

Over to You!



A POINT TO PONDER

With regard to the recently mooted allocation of band space on two metres for Novice operators, I would like to put forward this point to the discussion. If a decision is made to grant such privileges, after suitable resolution of any problems which may arise, perhaps the 70 cm band would prove to be in much more need of the increase in power which would result from an influx of new operators. This seems to be borne out by the call for increased use of the UHF spectrum allocation much coveted by the ever expanding commercial segment, as was indicated by DOC at the Federal Convention. Let us hear more on this one!

**A G Erick VK4FTL,
c/- Base Radio Station, RAAF
Amberley, Qld. 4305.**

FURTHER TO...

I refer to my letter concerning the "Amateur Radio Discussion Paper" and the reply by Andrew Keir VK2AAK, printed on page 59, of March AR.

I have delayed penning a reply in order, calmly and concisely to appraise Andrew's letter. The only opinion I can offer is that he went for his gun so quickly he has shot himself in the foot.

In my letter I went to great pains not to single out any individual as I am of the opinion that too much space is taken up in AR with unproductive personal criticism. In spite of this, Andrew saw fit to use my correspondence as a catalyst to launch a frenzied attack on my character, reminiscent of a rabid ferret!

I wish to make it known that I have never met or corresponded with Andrew in any way and, unless he is privy to information of which I am unaware, Andrew is manifestly unqualified to comment on my credibility.

In one paragraph he states that obtaining a full call is no great achievement, but in the next paragraph goes to great pains to inform us that he has recently upgraded. If it is no great achievement, why did he bother? (How's your foot, Andrew?)

Andrew states that his circle of friends has forgotten more about radio than I will ever know. Whilst I admit my knowledge is limited I hope what Andrew states is correct as this country is sorely in need of a new breed of technical wizard. Perhaps when Andrew's full potential is realised we can expect advances unprecedented since the days of Tesla and Edison. Look out Silicon Valley, here comes Devon Hills!

Yours sincerely,

**R Cummin VK2CRJ,
39 Hagley Street,
Rutherford, NSW. 2320.**

TRAILING ANTENNA

I am amazed at the article published on page 26, AR, June 1987, re VLSJA Aeronautical Mobile. Hopefully the Department of Aviation did not read this page.

Jeffrey Thornton's father should think before he lowers half a house brick out of any aircraft. This is completely unacceptable by DOA. Has he ever thought what would happen under negative "G" conditions? ruptured fuel tank, damaged flight and control surfaces, etc. The trailing antennas used on an aircraft must be approved by DOA and exit the rear of the aircraft by the use of a drag device.

Yours faithfully,

**Geoff Campbell,
279A Victoria Place,
Drummoyle, NSW. 2047.**

PLI COMMENT

The article on Power Line Interference in the June issue of AR was excellent and informative. We still however have the situation where amateurs, legal

users of the electromagnetic spectrum, suffer gross interference from outdated power distribution systems.

In many cases, where amateurs suffer S9 plus (wipe-out) PLI, the television signals are so strong that no PLI shows on any channel except Channel 2. Too bad if you do not have a low frequency television channel in your area, or the Channel 2 signal is very strong. What happens when all the television stations are moved out of the low frequency band, as has happened in the UK?

I put the questions to the Department of Communications.

1. "Would you tell a television viewer in a weak signal area that nothing can be done because the television signal is low level?"

2. "Would you tell a commercial/business radio user that nothing could be done about his PLI problem?"

Amateurs can be closed down for causing interference. In this age of equal opportunity, how about the power generating and distribution authority being made responsible for their interference problems!

Most power line interference problems can be eliminated with good engineering practice. Relying on unbonded mechanical joints and non-linear leakage paths is not good engineering practice when dealing with high voltages.

The same theory applies to power distribution as does to digital circuits — "Never have a floating situation". Like good antenna engineering practice — ensure that all potentials are well separated and all mechanical joints are well bonded.

Power line interference is incidental radiation: incidental radiation is radiation which is not required for the correct operation of the equipment or service (see the Radiocommunications Act).

Spark transmissions are banned by the Department of Communications, yet power distribution authorities appear to be exempt!

Yours sincerely,

**A D Tregale VK3QQ,
73 Nepesin Street,
Watsonia, Vic. 3087.**

BANDS, LICENCE GRADES

After much thought on the subject of new allocations for Novice, Limited and Combined Novice/Limited Licensees, I have compiled the following suggestions for consideration by readers. Similar correspondence has been forwarded to the DOC, the WIA and ARA magazine to stimulate discussion and comment. Many amateur radio operators hopefully are now stirring from their apathy due to the many opinions, concerns and, as some feel, threats, generated by the proposals, and the possibility of further input to DOC and the WIA is eminent.

My suggestions are as follows:

(A) Proposed new allocation — NAACP Novice Licence

1. 29.525-29.700 MHz — Mode FM (simplex and duplex operation, repeater use permitted).

2. 145.200-145.700 MHz — Mode FM (simplex operation only).

3. 439.000-440.000 MHz — Mode FM (simplex operation only).

Power — 10 watts DC (output from PA) maximum.

(B) Proposed new allocation — LAACP Limited Licence

1. 29.525-29.700 MHz — Mode FM (simplex and duplex operation, repeater use permitted).

Power — 10 watts DC (output from PA) maximum.

(C) Proposed new allocations — L/NAACP Limited Licence plus Five WPM Morse

1. 1.835-1.875 MHz — Modes CW, SSB, RTTY, SSTV and Packet.

2. 7.025-7.300 MHz — Modes CW, SSB, RTTY, SSTV and Packet.

3. 24.925-24.950 MHz — Modes CW, SSB, RTTY, SSTV and Packet.

4. 29.525-29.700 MHz — Mode FM (simplex and duplex operation, repeater use permitted).

Power — 10 watts DC, 30 watts PEP (output from PA) maximum.

(D) Proposed new allocation — AACP Full Call Licence

1. 9.000 kHz — secondary service — Modes CW and SSB.

Power 25 watts DC, 100 watts PEP (output from PA) maximum.

The above allocations are designed to spread amateur activity in an attempt to ease the congestion in some of the bands which are frequented by both Novice, Limited, Limited/Novice and Full Call alike. They also give these licensees more common ground which I feel will promote more study and create the need for the upgrading of licences to Full Call standard. By gaining a taste of VHF and UHF operation, novices may understand the usefulness of this part of the spectrum and wish to gain full privileges, even if only for the frequencies above 52 MHz and into the bargain gain further access to the HF spectrum.

By the same token, the Limited and the Limited/Novice licensee may gain further incentive to upgrade to Full Call through using the proposed new segments. I would also propose that the Limited licensee who is qualified at sending and receiving Morse at five words-per-minute should not be classed as a Novice on HF in view of his/her higher theory standard. It then follows that they be permitted to use some of the modes already in use above 52 MHz on these proposed segments where they will not clutter the Novice licensee's band space. I would also suggest that a new designation given to the combined call forming a new class of licensee.

While the segment 95-100 kHz would not be used by all Full Calls, I believe a lot of interest could be generated in this area. I understand that, on rare occasions, permission has been granted to a few amateurs to conduct experiments in this region. No doubt the challenge of building equipment for this band could make it the last bastion of the home-brewer which, in itself, is enough to interest many amateurs. Of course, the theory examinations would have to reflect the above proposals in content to ensure that problems did not develop during operations in these new areas, but I feel confident that this matter could be handled easily.

Above all, these proposals are designed to provide spectrum access for a larger number of amateurs and hence more efficient amateur band usage. It may be as well to plan these moves now as the commercial needs of spectrum space increase so that amateur radio as we know it, can survive into the next decade.

I will now end this rather long-winded "over" and confidently leave this matter for your consideration.

73, de,

**Peter McAdam VK2EVB,
PO Box 433,
Coffs Harbour, NSW. 2450.**

EXAMINATIONS

I beg to offer some comments on Brenda's Education Notes in the June issue. It was pleasing to read that a great deal of suggestion and discussion was presented relating to proposed changes in the amateur examination system. Any improvements in this area of amateur radio must be based on widespread opinion, especially from persons engaged in the training of future operators.

However, I noted that Brenda suggested that we "old hands" who took essay-type questions "had it fairly easy." As one of the standard types I must take issue on this point. The ancient required was based on the pre-high-tech approach to amateur radio. Far from swotting 10 past ques-

tions, we improved our chances by preparing — and thoroughly — at least 20 or 25 — complete with full circuit diagrams and detailed explanations. Anyone preparing only 10 to 15 model answers was taking a real risk of missing out. Having conducted AOCOP courses for many years, I might be pardoned for expressing this opinion. Also, wherever possible, instruction in theory — even with essay-type questions — had to be related to actual pieces of equipment — receivers, transmitters, power supplies, etc. Yes, we had no syllabus in those far-off days and this was for decades a weakness in the Departmental testing arrangements. It was only after considerable pressure from the WIA that Novice and AOCOP syllabuses were produced by the authorities. Admittedly, marking had to be conducted by technically competent Departmental officers, but that presented no problem, as the people concerned were technical types in the Examinations Branch of the Department, handling not only amateur examinations, but Commercial and Broadcast Operator's Certificates. There is nothing new in having examinations marked by persons who may vary in their assessments. A competent examiner's practice should be to make up model answers to his theory paper and then evaluate each candidate's efforts against the model.

I agree that multi-choice questions are easy to mark, but is that the most important criterion? I point out that it is just as easy to set direct questions such as "What is the length in feet of a halfwave dipole antenna to be used on the 3.5 MHz band?" instead of offering a range of four options. I would be possible to increase the sampling of a candidate's radio knowledge considerably by increasing the number of questions that should be answered in the allotted time. Also, there are candidates who have difficulty with reading and comprehending the various alternatives in the multi-choice format, which is a disadvantage in the multi-choice situation. Some people will complain that they find problems with writing essay-type questions. Their fears can be allayed by pointing out that amateur examinations are not designed to test English Expression, but Radio Knowledge. An essay-type question can be answered by listing points from one to 10 (or for example) with each point being followed by short notes to explain the sequence of operations. If the WIA accepts the challenge and takes on the examining function, we should be able to look forward to experimenting with other forms of questioning than just multi-choice. We do not want to find the "dead hand" of DOC on our shoulders to inhibit trail of alternative methods. There are plenty of people in the WIA capable of framing variations and assessing whether new formats are more useful than the clumsy and unwieldy types used at present. There are many other question formats available, but these have been ignored by the existing examination system.

At least there should be an option for candidates to "take" theory papers based on the existing Question Bank, but State Division examiners and radio club examiners should be given the chance to "try out" other formats. If the examining task is distributed to Divisions and radio clubs on an accreditation basis, there will not be the same pressure to have "easy marking" as the principal objective. The notion of a monolithic WIA examination system based on a Melbourne WIA central system is most unacceptable. The State Divisions should be responsible for examining candidates within their own State boundaries should be able to find people who have benefited from amateur radio to the extent that they are willing to "put something back" into our grand hobby.

Yours truly,

Rex Black VK2YA,
562 Kooringal Road,
Wagga Wagga, NSW, 2650.

LICENCING

I am getting sick and tired of all the so-called discussion about classes of licences and their introduction.

I thought, at first, that the idea of an easy-to-get CW-only licence was appropriate at the time. I envisaged a one to two year, non-renewable simple licence with home-brew equipment, a small portion of 160 or 80 metres, low power (five watts or less), and low licence fees.

After much discussion and deliberation I have changed my mind. Now, I feel that one class of licence is enough for all and that it should be AOCOP level or higher. Why such a change of heart?

Consider, novice was supposed to be a non-renewable licence and only an incentive to upgrade to AOCOP. But what happened when the time came to take it away? Although it was before my time, it seems they lobbied and decided to let them have it instead.

That was the first lowering of the standard.

The same could happen if any large group decided they wanted more of our bands. Novices can easily get together and claim as much of the bands as they like. It is easier than studying for the AOCOP and they have the numbers.

It is perilously close to that now with LAOCOP operators pushing to drop Morse code. They cannot be bothered to study either and they have the numbers, too.

Are AOCOP holders soft? Do you sit back and blame the WIA? Just because you have your full call does not mean that these issues do not affect you any more. Unless you make your voice heard, through the WIA if necessary, you can expect anyone at all to literally buy your spectrum space.

If you cannot take the trouble to answer surveys, vote on issues, or help in some way, then you do not deserve the title "ham". You may as well throw your equipment away and take up watching television.

There are many Silent Keys, better men than you, who you have to live up to now. Paying \$23 a year for a licence is not supporting your hobby. Merely double that for the WIA membership aid, help, not only will you get the magazine, QSL bureaus, repeaters, etc, you will get to vote.

\$40 a year is nothing these days, so, absolutely no arguments will be entered into.

Aaaah, what the heck... 73.

Gil Griffith VK3CG,
7 Church Street,
Bright, Vic. 3741.

Technical Correspondence

In reference to your *Equipment Review* article on p32 of the June issue of *Amateur Radio*, Emtron EAT-300A Antenna Tuner. I would like to make the following comments.

1 The EAT-300A is electrically identical to the EAT-300. Although it is a new unit with many new features, it does not supersede the EAT-300.

2 It is customary to rate all antenna tuners in PEP values instead of average and the reviewer should have been aware of it. There is a very good reason for this condition. Also the power rating is valid only when the tuner is correctly adjusted. A simple mathematical exercise shows that at a power level of 300 watts and a load range of 5 to over 2000 ohms a power level of less than 1000 volts appears across the terminals. The variable capacitors in our 300 series tuners are rated at 1000 volts; consequently when correctly adjusted they can easily handle their rated power and thus any transceiver on the market today.

3 There are two reasons for the use of a 200 watt FSD power meter in this tuner.

(a) since the meter does not indicate PEP but average power, there is no reason for a 300 watt meter

(b) the second reason is practical. All Emtron cross needle meters are custom made, and the manufacturer only accepts orders of thousands or more. It would be difficult to use a different meter for each Emtron product. The same meter is used in the EAT-300A, EAT-1000A, EAT-2000A, EP200 and some other equipment still on the drawing board.

4 The built in dummy load in the EAT-300A is rated 100 watts at 50 percent duty cycle for 300

watts at 20 percent duty cycle). Since all practical power measurements and tuning of older-type transceivers is done within a minute this has been set as a limit. This has nothing to do with the power rating of the tuner.

The dummy load is an additional useful feature but has nothing to do with the tuner and its power rating. The reviewer has confused these aspects.

5 Re the air-wound inductor over heating. Several tests have been conducted in our laboratory with a continuous power of 200 watts of 80 metres RF being applied for periods of 30 minutes. The inductor did warm up, which is only natural, but the temperature level assessed by touching it with a sensitive part of the hand was not unpleasant. These tests were performed on a balanced load with impedances ranging from 200 to 800 ohms. Therefore the claim is rejected. The 200 watts continuous power was generated with a transceiver driving a 1L922 linear amplifier.

The reviewer is correct in suggesting that tuning with 125 watts caused capacitors to spark. But note that is precisely what every tuner manual, no matter how poorly written, tries to prevent the user from doing. What the reviewer should have done, was to adjust the tuner first at low power as suggested in the manual and then apply full power.

6 Finally, criticism of the manual is fully justified. Too much has been taken for granted. These days when most amateurs are 'appliance operators', we at Emtron should have known and produced a more detailed operators manual, presently in preparation.

Yours faithfully,

Rudi Breznik VK2AOT,
Emtron Industries.

I was very interested in Ron Fisher VK3OMs excellent review of the Emtron EAT-300A Antenna Tuner, as appeared on p32 of the June issue of *Amateur Radio*.

I agree with Ron that this is a very good unit, as I had purchased one a short while before publication of the article. Ron rightly comments that 'tuning on most of the bands was extremely critical'.

All tuners of this type are critical to tune, a movement of one degree makes a big difference on any capacitor.

Within the first couple of hours of operation of my unit, I had removed all the nice looking small knobs with the wide markings and replaced them with old pointed knobs from the 'junk box'.

These knobs are easier to manipulate and make it easier to locate a previous setting, after changing frequencies.

I commend this change to other users of a similar unit.

73.

Allan Doble VK3AMD,
206 Poath Road,
Hughdale, Vic. 3166

"RADIOVISTA" WANTED

An Italian speaking amateur willing to translate any interesting Italian articles so they may be reprinted in AR.

For further information please contact:
(Mrs) Ann McCurdy at the Federal Office.

Silent Keys

It is with deep regret we record the passing of —

MR M F POTTS
MR VAN DER VEN

VK2EK
VK3AEN

four man jazz band. His band was engaged to play for school dances and other functions in the district. Music, particularly jazz, proved along with his radio, to be a lifelong interest for Vern.

Vern passed away suddenly from a heart attack on the evening of August 8, 1986.

He was a Christian gentleman, and left the world a better place. He was dearly loved, and is sadly missed by his wife Lorraine, children Shirley and Kevin (VK4BKE), eight grandchildren and nine great-grandchildren.

Vern's XYL, Lorraine Everitt
ar

RAYMOND EDWARD JONES VK3RJ

The death on Friday, May 22, 1987, of Ray Jones VK3RJ, marked the loss of one of the best-known and respected members of amateur radio in VK and overseas, and also a friend we have known for many years.

Born in January 1900 at Maryborough, Victoria, as one of six children, Ray lost his father at a very young age. The family found the going extremely hard, but with Ray's assistance and support, were able to cope.

At the age of 14 years, Ray joined the Postmaster General's Department, as a Telegraph Messenger, at Maryborough. Four years later he enlisted in the Army, but did not see any overseas service because of the cessation of hostilities shortly afterwards.

After being discharged from the Army, he returned to the Post Office and was promoted to a Telegraphist at Central Telegraph Office, Melbourne. He continued in this position until the outbreak of World War II, in 1940, when he again enlisted and saw service as LAC and rose to the rank of Squadron Leader.

At the end of the war he resumed in his former position of a telegraphist in Melbourne and was subsequently promoted as Supervisor. He retired in 1960, when he and his wife, Lilian, travelled on an overseas trip to Europe and the USA. Here they met many amateurs with whom Ray had contact with since receiving his amateur licence in 1928, under the call sign VK3RJ.

With 58 years of activity under his original call sign, Ray was a tireless supporter of the Wireless Institute and managed the Inwards and Outwards Sections of the QSL Bureau for many years. He was rewarded with Life Membership of the Institute for his work in this area. He was a foundation member of the RAOTC and served on the committee in its early years of formation. He was also a member of the First Class Operators Club and many other clubs associated with DX and CW. The walls of his shack were covered with certificates and awards of all types which indicated his remarkable prowess in contest working, including DXCC.

Ray was an expert CW operator and his sense was a real pleasure to copy as the rhythm and clarity of his signals was outstanding.

Although in failing health for sometime, Ray maintained his interest in amateur radio almost to the day of his becoming a Silent Key.

Ray's wife pre-deceased him four years ago. He is survived by two daughters and four sons and their families, to whom we extend our sincere and deepest sympathy.

He will be greatly missed by all who knew him. Vale Ray.

Wall Matters VK3MJ, Ivor Stafford VK3XB & Mavis Stafford VK3KS

See also a tribute to Ray, this issue.
ar

CAMPBELL (BANJO) PATTERSON VK5XR

"Banjo" lived in Naracoorte, South Australia, 600 metres from my home, when I was just a baby. Our late fathers John

Patterson and Roy Crawford, were great friends.

Around the age of nine years, I walked into Banjo's shack and was astounded by the bank of accumulators — a crystal oscillator, Morse key feeding an 'end-fed Zepp' with power out of four watts on the 7 MHz band.

Banjo's first entry in his log book was on May 5, 1933 when he contacted Jack Lester VK5LR. (Jack is now residing at Inman Valley and is still active at the age of 85 years.) On May 5, 1983, VK5LR and VK5XR again made contact on 7 MHz with SSB to commemorate "50 years of amateur radio" for VK5XR.

Banjo was a keen rifle shooter and, despite having lost the sight of one eye at an early age, won many trophies on the rifle range. His brother, Murray, was one of the members of Jim Kelly's "Bullocky Drive" from Naracoorte to Port Adelaide.

After leaving Naracoorte, Banjo started a radio and electrical business at Peterborough, South Australia. At a later date he became manager of the Peterborough Power Station, a position he held until his retirement.

Banjo was 75 years of age when he passed away. I have many fond memories of the Patterson family and extend deep sympathy to his wife, Cecile and family.

Bill Crawford VK5XB
ar



QSP

RADIO DETECTION EQUIPMENT — A NEW USE!

The Federal Department of Communications has recently helped the Police Department of New South Wales, track down some \$30 000 of stolen property, including transmitters, stolen from the State Rail Authority, which were used to direct trains.

A state-of-the-art Radio Detection Finder, urgently recalled by DOC from Perth, was pressed into service on receipt, to trace the source of illegal transmissions, presumably from the stolen radios.

A spokesperson for the DOC said that with the information gained the police were able to simultaneously raid six premises and subsequently charge three people.

The spokesperson said that the stolen transmitters had apparently been illegally used to disrupt radio traffic on the train working frequency, including an attempt to make a train run against a red stop light.

DOC officers had worked closely with state police and railway officers by using direction finders and other radio monitoring equipment in two vehicles which traced the source of the illegal transmissions giving evidence enabling the police to obtain search warrants and execute them in a dawn raid.

The operation was spearheaded by the NSW Tactical Response Group and included teams from the Dog Squad, Anti-Theft Squad, the State Railways Authority Investigation Branch and officers of the Sydney Regional Office of the DOC.

The spokesperson said it was the first time a search warrant had been obtained under the Radiocommunications Act 1983, where Departmental officers, instructed by the police, searched the premises for illegal transmitters and conducted records of interview which allowed charges under the Act to be made on-the-spot for suspected breaches. Previous to the proclamation of the Act, proceedings would have had to be carried out by summons.

From DOC Press Release Number 35/87 9th June 1987

Obituaries

VERN EVERITT VK2LR

Vern was born at Marrickville, Sydney, on December 23, 1908. One of his great joys and life-long interests was his radio. Unfortunately, specific details of his early activities with radio are not available. However, his sister recalls that when he was about eight or 10 years of age, well before he went to high school, he made a crystal set for which he bought ear phones. As he had no form of amplification, he put the ear phones in his mother's mixing bowl and the volume and clarity of sound that resulted was amazing. Vern's daughter recalls being told that at about the same age, he used to carry a heavy car battery around to operate his radio.

The source of Vern's early interest in radio is not clear. It is thought that someone connected with the Boy Scouts or the Dulwich Hill Holy Trinity Anglican Church Boys Choir, to which he belonged, assisted him. Vern made several crystal sets for neighbours and friends. He later made several valve sets when he was in his early 20s. A boyhood friend recalls that the four valve radio made for him by Vern around 1929 operated well until after the war and was still operating well when it was replaced. When Vern was about 12 years old he subscribed to some early wireless magazine. Later in the 1930s and 40s he subscribed to Wireless Weekly.

In the 1920s, Vern belonged to the Lakemba Radio Club. Recently, when the LR call sign became available Vern changed his call sign from VK2BQO to VK2LR, in memory of his early Lakemba Radio days.

Vern looked forward to the journal *Amateur Radio*. He particularly enjoyed the diagrams of circuits and board layouts, and was working on several of these up to his passing. As cataraacts had resulted in his having very poor, almost negligible eyesight, this was surprising and gives some indication of his great love and interest in radio.

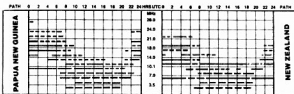
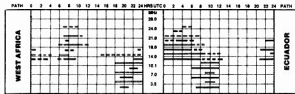
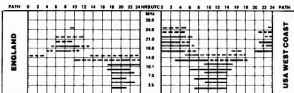
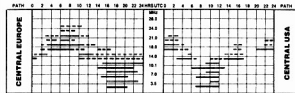
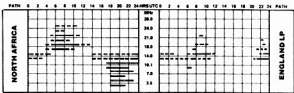
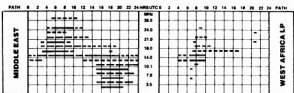
Vern's many radio friends well remember and miss his daily scheds with his son, Kevin, and with them, Vern was active on the air right up to the day of his passing, having made contact with Kevin VK4BKE, that very morning.

Vern was a man who was "larger than life". He had a wide spectrum of interests and abilities. He had a keen and inquiring mind. He occasionally commented that there was not enough time to pursue all his interests. Professionally he was a lawyer. He had the distinction of being the youngest person admitted to the Bar. He had an outstanding career in the Crown Law Office and Public Works Department before his resignation to commence his own legal practice in 1949.

Vern was a brilliant musician and was proficient in playing the violin, clarinet, range of saxophones, piano and organ. While in his third year at Fort Street Boys High School, Sydney, (where his name is on the Academic Honour Roll) Vern formed a

Ionospheric Predictions

Len Poynter VK3BYE
14 Esther Court, Fawkner, Vic. 3060



LEGEND

From Western Australia (Perth)

From Eastern Australia (Canberra)

Mixed mode dependent on angle of radiation (long broken lines)

Better than 50% of the month, but not every day (continuous lines)

All paths unless otherwise indicated; (LP = Long Path) are Short Path.

Less than 50% of the month (short broken lines)

Predictions are presented courtesy of the Department of Science, IPS Radio and Space Services, Sydney.

Solar Geophysical Summary

— APRIL 1987

Solution to Morseword 5

Across: 1 cor 2 fear 3 nark 4 gale 5 Yemen 6 vast 7 doc 8 stems 9 notes 10 laps
Down: 1 norm 2 iris 3 grew 4 fog 5 tidy 6 coo 7 mange 8 eases 9 mule 10 fetes

	1	2	3	4	5	6	7	8	9	10
1										
2	*	*	*	*	*	*	*	*	*	*
3	*	*	*	*	*	*	*	*	*	*
4	*	*	*	*	*	*	*	*	*	*
5	*	*	*	*	*	*	*	*	*	*
6	*	*	*	*	*	*	*	*	*	*
7	*	*	*	*	*	*	*	*	*	*
8	*	*	*	*	*	*	*	*	*	*
9	*	*	*	*	*	*	*	*	*	*
10	*	*	*	*	*	*	*	*	*	*

Solar activity was mostly low in April with two M1 flares being reported on the 8th and 16th. Despite the low solar activity there were a number of reasonably sized regions visible on the solar disc after the 4th. At times these promised significant solar activity but little eventuated. These solar regions pushed the 10 cm solar flux up to levels not seen for a considerable period of time. They ranged from a low of 72 on the 2nd and 3rd, up to a high of 105 on the 16th. This value was the highest observed on any day since June 1984. Most of these regions seen during the month were 'new cycle' regions. The high month averaged sunspot number (39.3) for this month

has caused the yearly smoothed value for October to be greater than the September figure. This raises the possibility that September 1986 is the date of the solar minimum. Sunspot monthly average for April 1983 1987
Yearly average 9.86 12.4
A index average for April 7.4

GEOMAGNETIC ACTIVITY

April was a very quiet month with just two days with A15 or over; H = A16, 7 = A15.
— From data supplied by the Department of Science IPS Radio and Space Services, April 1987

This space is reserved for your business card.

DEADLINE

All copy for inclusion in the October 1987 issue of *Amateur Radio*, including regular columns and Hamads, must arrive at PO Box 300, Caulfield South, Vic. 3162, at the latest, by 9 am, August 20, 1987.

Hamads

PLEASE NOTE: If you are advertising items FOR SALE and WANTED please write each on a separate sheet of paper, and include all details: eg Name, Address, Telephone Number, on both sheets. Please write copy for your Hamad as clearly as possible. Please do not use scraps of paper.

- Please remember your STD code with telephone numbers
- Eight lines free to all WIA members. \$9.00 per 10 words minimum for non-members
- Copy in typescript, or block letters — double-spaced to Box 300, Caulfield South, Vic. 3162
- Replies may be charged at full rates
- If QTH means address is correct as set out in the WIA current Call Book

Ordinary Hamads submitted from members who are deemed to be in the general electronics retail and wholesale distributive trades should be certified as referring only to private articles not being re-sold for merchandising purposes.

Conditions for commercial advertising are as follows:
\$22.50 for four lines, plus \$2.00 per line (or part thereof)

Minimum charge — \$22.50 pre-payable

Copy is required by the Deadline as indicated on page 1 of each issue.

TRADE ADS

AMIDON FERROMAGNETIC CORES: Large range for all resistor and Transmuting Applications. For data and price list send 10¢ x 220 mm SASE to: RU & W IMPORTS, Box 157, Mortdale, NSW, 2223 (No inquiries at office... 11 Macken Street, Oakley, Agencies at: Geoff Wood Electronic, Lane Cove, NSW, Webb Electronics, Albany, NSW, Truscott Electronics, Croydon, Vic, Willis Trading Co, Perth, WA, Electronic Components, Fishwick, Plaza, ACT.

WANTED — NSW

CW FILTER: YG-3395C to suit Kenwood TS-520S, Ken VK2YRL, QTHR. Ph: (066) 24 2433 (BH) or (066) 24 3197 (AHL).

WANTED — VIC

GALAXY 5 HF TRANSCEIVER: Ext VFO & mic. Must be A1. Also TS-820 or similar. Also TR-7200 desk/mobile or similar. All band HF ant tuner. 14V AVO vert ant or similar. Grac VK3UB, QTHR. Ph: (03) 49 2973.

PHOTOCOPIER OF CIRCUIT BOOK: of Marconi VHF/UHF signal generator TF1064. Wanted known if anyone has a video machine which plays Sanyo tape VT003 & is side-loading. For copying of tape transfer. VK3YNB, QTHR.

POWER SUPPLY: or circuit diagram for Geleco unit 4104 comprising +100V/500mA, +300V/500mA, +85V/2mA, 6.3V/1.4A & 6.3V/750mA. Please state condition & price to Manuel VK3DRQ, QTHR. Ph: (03) 420 7385/399 (BH).

ROTATOR: suitable for 6 element beam in good condition. VK3WL, QTHR. Ph: (03) 741 7854 (AH).

WANTED — QLD

CIRCUIT DIAGRAM: for Yaesu FRG-7. Will pay costs. VK4NPK. Ph: (075) 53 2832.

KENWOOD PS-20 or PS-30 POWER SUPPLY: or locom equivalent. VGC. Ph: (079) 84 9201.

RF SIGNAL GENERATOR: to 500 MHz. AM & FM by VK4ADY, QTHR. Ph: (071) 86 4492.

WANTED FOR GYMPE AMATEUR RADIO CLUB MUSEUM: Amateur commercial domestic military & home-brew radio & electronic gear. Alan VK4BWG, QTHR. Ph: (071) 83 1127.

WANTED — SA

SANWA "SEEC" T.1200 2 METRE FM TRANSCEIVER: (model AS) operating manual or photocopy thereof. Marlene VK500, QTHR. Ph: (08) 339 2329.

WANTED — TAS

FTV-107R: Harry VK7VH, QTHR. Ph: (003) 65 1578.

FOR SALE — ACT

ICOM IC-92AT HAND—HELD VHF TRANSCEIVER: HM9 speaker-mic, BP-3 nicad BC25SE charger. \$375. Werner Wullf duo band 1015 1100. Hustler 45T/V altband vertical 600. Buyer collects. VK1BZ. Ph: (062) 80 1254.

FOR SALE — NSW

ALINCO 2 M LINEAR AMP: New. Never used. 10-30, 5W, cost \$89. XDS best offer. Leo VK2QB, QTHR. Ph: (049) 43 3392.

DECEASED ESTATE: TS520DGS; Info-tech M-300C; Info-tech M-200F. See VK2 Mini-Bulletin notes for tender details.

FT-107 TRANSCEIVER & FT-107P POWER SUPPLY/ SPEAKER: \$900. TR7400A 2 metre mobile transceiver with heavy duty output power \$300. Bud lowpass filter \$40. Sanwa CX505 50 kohm per volt multimeter. \$50. Drake W4 wattmeter \$50. SBW antenna switch \$30. Ocraft SWR & power meter \$20. Geoff. Ph: (02) 489 4318.

ALINCO 2: dual VFO & general coverage. (receiver) \$750. Yaesu FT-707 power supply \$250. Frank. Ph: (032) 3298 (BH) or (02) 621 4149 AH.

YAESU FT-707 TRANSCEIVER: FT-707 power supply, FC-707 antenna tuner, PV-707DM digital VFO, 18 AVT H-Gain vertical antenna. Will sell as one lot only. Offers to David. Ph: (02) 29 1768 (BH) or (02) 498 2258 (AH).

FOR SALE — VIC

2CB9A UHF/SF TRANSMITTING TUBES: New \$30 ea. 2m converter FET VK3AFQ design \$40. RTTY gear, 64k TR580 colour computer, MFJ-1229 deluxe RTTY-CW interface, B/W monitor, software for RTTY & CW, data cassette recorder. \$500 the lot. Brand new Tektronics 5" display unit, QTHR for RTTY monitorscope. \$100. Dick VK3AHT, QTHR. Ph: (03) 874 4967.

COLLINS 515-S COMMUNICATIONS RX: As new \$550. Kenwood digital display DG-5 as new \$120. Ph: (052) 48 1410 after 7 pm.

ICOM 2M TRANSCEIVER: IC-22A. Repeaters 3, 4 & 8. Channel 37, 40, 50 & 51. VGC with manual. \$150. Andrew VK3BJW. Ph: (03) 678 8593.

ROTATOR: Emulator model 502ASX. New & unused in carton. \$500. Dummy load. Oil filled. 1 kW to 30 MHz. MFJ (USA) Model Versa 250. \$50. Alan VK3AMD, QTHR. Ph: (03) 570 4610 or Ec VK3EM, QTHR. Ph: (03) 578 7745.

SIGNAL GENERATOR: F995 BS 200 MHz to 220 MHz. CW/AM/FM variable deviation. Output 1 V to 100 mV in 1 dB steps. Very stable, in condition as new. Full set of spares, complete operating and service manuals. All leads & termination unit. Calibrated for 50 ohm output. \$550 ONCO. Mark. Ph: (03) 509 6845 9 am to 9 pm.

SOUTHERN STAR POWER SUPPLIES: 2 only. 240V in, 13.8V DC out, 4A peak, 1.5A continuous. Suit units up to 25W. Perf cond. \$45 each. Mobile rack for Kenwood 130S transceiver. Perf cond. \$35. A&R transformer PR1V 180/250, VA 1000 50, Sec V115, Sec 8 in int. Enclosed W handle \$100. Ex cond. Ph: (055) 82 6016.

TOWER: Nally radio tower. 13.7m. Extensible. Rated 40 MP's wind velocity. In perfect condition. \$690. Ph: (03) 569 5378 after 4 pm.

FOR SALE — QLD

DIGITAL FREQUENCY METER: 7 digits, frequency & period, "EA" Dec 81/86 82, 50 MHz with 500 MHz prescaler & dec 1 pt mod'n. Transmitters kits, all

instructions. At 1/2 new price, posted anywhere in VK for \$120. VK4ADY, QTHR. Ph: (071) 86 4492.

DRAKE C-LINE (R4C & T4X): Full coverage capability receiver & amateur bands transmitter. Very reliable rig in good condition, with many features found on more modern sets, including twin VFOs, notch filter, manuals, etc. Spare films included. \$550. Wanted IC-740 or similar compact mobile rig in top condition. Details to John VK4SE, QTHR. Ph: (070) 61 3206.

DRAKE TR-7 HF TRANSCEIVER: All solid state, instruction manual, service manual & extender boards, plus original power supply. VK4KCE QTHR. Ph: (07) 284 7738.

TWO ELECTRONIC MORSE KEYS: Recently home-brewed. RF protected in attractive metal case. Both have cathode & grid keying. Look good & work well. Been tested on air. Speed about 5-40 WPM. One has red/green LEDs to indicate cathode or grid keying. Separate paddle or lentic key needed with both. \$110 for one, \$105 for the other. Ron Johnson VK4FT, QTHR. Ph: (079) 6552 Yeppoon.

FL2102 LINEAR: In mint condition. \$750 plus freight. Steve VK4KHQ, QTHR. Ph: (077) 43 4508 (BH), (077) 44 3100 (AH).

ICOM INTERNAL PS-35: 20A supply for 751 etc. Little used, warranty still \$300. Home-brew 14V 8A reg PS. GC. \$35. HF Linear, \$1466. 1W-100 W. Compact ind. PS. Well made \$100. Yaesu 9 MHz xtal filters. 1xSSB, 1xCW \$20 ea. VK4AZ, QTHR. Ph: (091) 5526, (07) 227 7224 (BH).

YAESU YG-100 MONITORSCOPE: Brand new & had no use. \$200 ONCO. Yaesu FL2102B, never been used. Less valves, best offer over \$220. Unit was checked over by Mitchell Radio & is in good condition. Eric VK4NUQ, QTHR. Ph: (071) 86 7255.

FOR SALE — SA

CB RADIO COURIER GLADIATOR: Converted to 10 metre band (28 MHz). Includes 1 power supply for base operation, 1 cradle for mobile, 1 Dick Smith frequency counter, 1 antenna & base for the mobile 10 metre band. All perfect condition. Also D Smith antenna matcher. Sell at \$250 the lot. Freight not included. Ph: (087) 25 7715 all hours.

FOR SALE — WA

YAESU FT-101Z TCVR: Very good condition. One owner. Complete with WARC bands & microphone. \$400 ONCO. Ross VK6KYM, QTHR. Ph: (08) 385 6138.

FOR SALE — TAS

YAESU FT-880 TCVR: as new, inc. gen cov. rx, power supply, service manual, box etc. Cost now approx \$3900. Sell for \$1900 inc. base, ONCO. VK7AN, QTHR. Ph: (003) 31 7914.

SWAP — QLD

HAVE ZL1LH SCANNER: works well, to swap for 2 metre FM rig or sell for \$200. Gordon VK4AG, 15 Gordon Lane, Mt Morgan, Qld. 4714.

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SYDNEY — MELBOURNE — BRISBANE



EMTRON'S MODULAR ANTENNA TOWERS

NEW

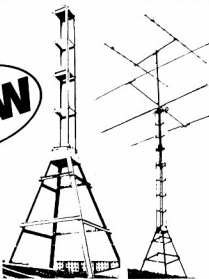
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The first multi-band transceiver that'll impress everyone except car thieves.

The new ICOM IC-900A is a totally new modular concept in multi-band amateur radio transceivers.

First, it's designed to fit into the stylish, compact instrument panels of modern cars rather than the glove box. Secondly the modular concept makes theft less attractive.

You see, what makes this concept so impressive is that the main and most expensive components of the radio can be secured and hidden away in the boot.

Its technology is equally impressive.

The IC-900A is the first known to use optical fibre technology in an amateur transceiver. It uses optical fibre cable as a link from the two interface units. One for the remote controller and the other for the band units.

This provides an accurate display of frequency and memory data for any data for any two bands in use.

The IC-900A has a multi-band independent receive and transmit capability. So, it can monitor and use each installed band simultaneously, giving

the effect of multiple transceivers.

The transceiver has 10 programmable memory channels in each band unit; up to 60 memories all together. Tuning can be selected in 5 KHz, 10 KHz, 15 KHz, 20 KHz and 25 KHz steps. Options include either the UT-28 Digital Code Squelch (DCS) unit or UT-29 Tone Squelch Unit.

The UX-19 band unit covers 28-30 MHz with 10/1 watt selectable output. The UX-59A covers 50-54 MHz at 10/1 watts. The UX-29A covers 144-148 MHz at 25/5 watts (a UX-29H version offers 45/5 watts). The UX-49A covers 430-440 MHz at 25/5 watts. And the UX-129A covers 1240-1300 MHz.

If you find all this impressive, you'll be most pleased to read that the IC-900A handbook is excellent and simple to follow. Especially on installation procedure.

Perhaps the best thing to do is to visit your ICOM dealer and see how more impressive the IC-900A is in the flesh.

For details of your local dealer phone ICOM on Melbourne (03) 529 7582 or (008) 33 8915 from elsewhere in Australia.



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NOVICES ON THE TWO METRE BAND

A Review of the History and the Issues

by Ron Henderson and Peter Gamble

Ever since the introduction of the Novice Licence in 1977 there has been a desire for a "common" band so that all amateurs could communicate with each other. This was first raised at the 1977 Federal Convention. However, it was concluded at that time that there was insufficient support for a common band.

At successive conventions motions were raised with the intent of finding a common band for all licencees. As an example, at the 1982 Convention, VK6 proposed without success that novices be allowed to use approved, channelised, low power FM equipment on the seventy centimetre band. There was concern that this might also lead to "type approved" equipment which is contrary to WIA policy and indeed the reason for the existence of amateur radio. Coupled with this, there have been other attempts to extend existing novice sub-bands and privileges. None of these proposals received sufficient support at the various conventions to be passed. Nevertheless, there was a great deal of interest and discussion on these issues.

Insert in Aug A.R. 1987.
At the 1982 Convention, a policy statement on novices was produced which stated that the Novice Licence was considered to be an "entrance grade". This was reviewed at the 1986 Convention, where a further motion recommending that there be no extension to novice privileges at this stage was passed.

The 1986 Federal Convention also took a different approach. A motion was proposed which extended the novice privileges to the six metre band. Rather than decide on this matter in isolation, it was referred to a newly formed committee - one charged with looking at the future of amateur radio. The fact that this proposal for novice use of six metres was referred to this committee was considered to be an expression of support for the idea. However, there was some difficulty in getting this committee off the ground during 1986/87 and so no report on this matter came to the 1987 Convention.

At the 1987 Federal Convention, the VK3 Division sought to separate the novice use of six metres from the greater issue of the future of amateur radio and achieve a decision in isolation. At the same Convention, the VK3 Division proposed a novice allocation on a small two metre band segment for CW and SSB use only. These matters were debated at length. Separation of the novice use of six metres from the future of amateur radio was lost on the vote (4 to 2) but the debate disclosed very strong support amongst all divisions for a common band for all classes of licence holders.

Coupled with the knowledge that the Department of Communications intended to authorise a reciprocal agreement with Japan, which would permit their telephony licence holders (a grade technically lower than our novice) to operate on VHF and UHF bands using ten watts and telephony mode, the Council saw merit in seeking two metre privileges for the Australian Novice.

Whilst the initial VK3 proposal was for a band segment for CW and SSB only, the Council conceded that true common band operations could only be achieved by the inclusion of the FM mode. The extra privileges proposed were qualified in that the existing novice power levels and emissions were to be retained with the addition of FM voice. This motion was carried almost unanimously, with the VK1 Division

dissenting only on the choice of band.

There was no intention of making the Novice Theory exam paper harder by the inclusion of FM or VHF techniques, for the Federal Council has given clear directions that there is to be no lower grade than the Novice (1976) and the Novice exam level is to be restored to its early standard.

In debating the matter, the Council was mindful of the gap between novice and full licencees and sought to achieve greater unity. Instances were cited of novice operators being formally constrained from actively participating in WICEN, divisional broadcasts, club stations and other similar activities. There was also a desire to be innovative rather than reactive, and not wishing to be criticised yet again for slow deliberations. Finally, there was the hope that this would raise the visibility and involvement of novices in amateur radio activities and end any possible discrimination.

The mood of the Council, as expressed in the motion, was to take immediate action. Consequently a request, based on the motion passed, was delivered to the DOC on the following Monday. It was adjudged the feeling of the council this apparent unearned gain by the novice was highly desirable to lift flagging interest and declining growth in amateur radio as a hobby. Subsequently this matter was discussed at a joint DOC / WIA meeting in Canberra on 19th May 1987. At this meeting the Manager, Regulatory Operations Branch, Mr David Hunt, advised that the DOC had received a number of direct submissions both supporting and decrying the request. He further advised that the DOC would seek additional information from the WIA in support of its submission. This request has since been confirmed in writing.

The Federal Executive, at its May 1987 meeting resolved:

"That in the light of comments received from the amateur community, and with recent discussions with DOC, the issue of extended novice privileges in the two metre band be referred to the Committee for the Future of Amateur Radio; that this committee be asked to produce a number of discussion papers coupled with a general review of licensing grades and operating privileges existing in the amateur service."

The Future of Amateur Radio Working Party is now active and is preparing a series of five papers which address various issues, including the broader issues relating examination requirements and morse code proficiency to operating privileges. The comments made by many amateurs on this and other related issues have been forwarded to this Working Party.

We hope that this report has brought you up to date on the issues relating to the "Novices on Two Metres" proposal. Further, the papers prepared by the FARWP will be circulated to the Federal Councillors (and thus to the Divisions) for comment and input on the issues raised therein.

For the Federal Executive,
Ron Henderson, VK1RH and Peter Gamble, VK3YRP.
19th July 1987.